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PERSPECTIVES ON HEALTH

BY JANET ABLESON, PETER PADDON, CLAUDE STROHMENGER

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ABBREVIATIONS

PYLL — Potential Years of Life Lost

WHO — World Health Organization

PAR-Q — Physical Activity Readiness Questionnaire

DMFT — Decayed, Missing, Filled Teeth

NOTE

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Preface

In the nineteenth century, Ralph Waldo Emerson wrote that "The first wealth is health". Like many great truths, this statement was short, but to the point. Indeed, conventional wisdom has long recognized the importance of good health.

In Emerson's day, infectious diseases were the major natural causes of death. Today, these have been largely replaced by degenerative processes, such as heart disease and cancer. In Canada, the move towards improved health care is now well-established and life expectancies are on the rise. However, as the baby boom generation ages, attention will increasingly focus on health care issues.

Some of the facts presented in this study are predictable; others are astounding. Did you know that the Canadian population is aging and by the year 2022, every hospital bed now available to the general population could be filled by an elderly person? Did you know that 11% of all deaths in 1978 were related to alcohol use?

In this document, current knowledge on trends and health care in Canada has been compiled to portray the situation as it exists today with a view to planning the health care of the future. It marks the first time that some of these data are published together.

The demographic overview of the Canadian population provided in Chapter I lays the groundwork for the following chapters.

The underlying model for the major part of the analysis moves from a study of the risk factors to a presentation of health status to a look at the consequences.

While improving health status has always been the goal of the health care system, today there seems to be a shift towards preventative medicine. Lifestyle factors such as the use of tobacco and alcohol contribute to the incidence of disease, while others, such as regular exercise, are deterrents. Chapter II reports on these health risks and preventative practices.

Just how healthy are Canadians? This can be measured by looking at life expectancy, death and illness in hospitals and disability as indicated in the Canada Health Survey. Chapter III points out that Canadians are living longer and consequently major causes of death are linked to aging.

The extent to which health services are used largely depends on the incidence of illness and disease experienced by Canadians. Chapter IV discusses physician, hospital and dental services.

In addition to its primary role, the health care system makes up an important sector of the Canadian economy. Chapter V concludes this report by presenting information on the various health manpower groups, facilities and expenditures.

This study is intended to create a composite picture of the health of Canadians. While the report is divided into distinct and separate topics, it should be kept in mind that the various aspects of the health care system are highly interdependent. As a result, changes in one part of the system will affect other areas, although few of these associations have been reviewed here.

Acknowledgements

Principal contributions to this document were made by Claude Strohmenger (population, alcohol, tobacco, accidents and violence, and mortality), Peter Paddon (utilization of health services and health care system), Janet Ableson (institutional morbidity, population-based health status measures, and selected disease statistics), and the report *The Health of Canadians: Report of the Canada Health Survey* (activities and fitness, drug use, and preventive health practices).

Many people took the time to review, assess and comment upon earlier drafts of this report. The authors thank, in particular, Russell Wilkins of the Institute for Research on Public Policy, Barbara Ouellet and Neil Collishaw of Health and Welfare Canada, and John McWhinnie of Indian and Northern Affairs for their constructive suggestions, many of which have been incorporated in the final version. Collectively, however, the three principal authors assume responsibility for the final product, including any remaining errors or omissions.

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HIGHLIGHTS

Population

The average age of Canadians is increasing as the baby boom generation grows older and is not producing children at the same rate as their parents. This process, currently accompanied by a decline in immigration has repercussions both on population growth and age structure, two rather significant concerns for health planners.

For the next few decades, planning of health resources may be affected as much or more by changes in age structure as changes in population size. For example, in 1951 persons aged 65 and over accounted for less than 8% of the population and about 32% of total hospital patient-days, but in 2031 the proportions could rise to 20% of the population and 60% of hospital patient-days.

Since a large number of health problems are linked to lifestyles and environment, it is important to understand both the geographic and socio-economic background of individuals. For example, in organizing the health care system, the elderly who live alone must be considered; their proportion has more than doubled in the past 25 years.

Determinants of Health Status

Such lifestyle factors as tobacco, alcohol and drug use, along with environment, biological inheritance and health care practices determine a person's health.

Three of 10 adults both smoke and drink. Evidence suggests that about 600,000 people who smoke at least 23 cigarettes a day and drink an alcoholic beverage at least 14 times per week are exposed to serious health risks.

Among illnesses generally associated with smoking, cancers come to mind first. Perhaps less known, however, is the role of tobacco in the onset of heart diseases.

In Canada, average adult consumption of cigarettes is levelling off among males while continuing to increase among females. Whereas in 1965 among 15-19 year olds, male smokers outnumbered females two to one, today there are equal proportions of smokers from both sexes.

Canadian consumption of alcohol has doubled since 1950. The increase is pronounced among teenagers of both sexes, and more pronounced among females than among males.

Since 1965, the number of alcoholics has more than doubled; there were an estimated 635,000 alcoholics in 1978, or 1 adult drinker in 20. An estimated 1.4 million persons, or 1 adult drinker in 10, now suffer from an alcohol-related handicap.

In 1978, alcohol consumption was the direct cause of 2,520 deaths and the indirect cause of 5,668 others (traffic accidents, falls, etc.). Furthermore, there is evidence that alcohol played a role in 10,142 other deaths. Thus, almost 11% of all deaths in Canada in 1978 have been linked with alcohol consumption.

About one-third of Canadians achieve minimum recommended levels of physical activity and only 40% maintain a recommended level of fitness; recent preliminary findings indicate that this proportion is increasing. At all ages, women are not as active as men.

Many Canadians use legal drugs for both preventive and curative purposes. For certain types, particularly tranquilizers or sleeping pills and laxatives, the rate of use by women is more than double that of men.

Accidents rank third among causes of death in Canada, after diseases of the circulatory system and tumors. The number of deaths due to accidents is small in comparison with the other causes, but since they occur at relatively early ages, they have a rather significant impact on life expectancy.

Almost 40% of years of life lost between the 1st and 70th birthdays are as a result of accidents and violence. Moreover, 40% of these years lost are due to traffic accidents.

For every person killed in a traffic accident in 1975, approximately 36 were injured. The traffic accident morbidity rate in Canada almost doubled between 1960 and 1975. Since highway traffic accidents are largely attributed to human factors, it would seem that much of the related mortality and morbidity could be prevented.

Even though immunization is an effective means of preventing many serious illnesses, more than 4.5 million Canadians have not had polio shots.

Rubella, or German measles, while in itself not a serious illness, can cause birth defects in infants born to women infected during pregnancy. Over 250,000 women in their prime childbearing years (15-34 years of age) are inadequately protected against this disease.

For women the Pap smear and breast self-examination are two accepted cancer-preventive measures. Yet only 42% reported having a Pap smear during 1977-1978, and 21% never had one; 60% conducted breast self-examinations, but only 21% on a monthly basis.

Health Status

Since 1931, significant progress has been made in the battle against infectious diseases in Canada. In that year, two-thirds of the male population could expect to reach the age of 60; 45 years later, the proportion increased to 80%. For females the proportion rose from 68% to 89%.

Apart from accidents and violence, the major causes of death are related almost exclusively to degenerative process, such as heart disease, cancer, stroke and respiratory diseases.

Of particular importance for preventive health care is knowledge of the causes of premature death. For example, ischaemic heart diseases such as heart attacks and aneurysms are responsible for one quarter of deaths occurring between ages 1 and 70, but only 15% of the potential years of life lost, whereas traffic accidents account for a comparable number of potential years of life lost but only slightly more than 6% of the deaths. As might

be expected, these differences are due to the age at which the deaths occur: heart disease happens among relatively older persons, but fatal traffic accidents occur primarily among the younger population.

The leading causes of hospitalization are heart disease, stroke, accidents, mental disorders and respiratory diseases. Except for mental disorders, these are also leading causes of death.

While hospital morbidity data reinforce the importance of dealing with the leading causes of death, they also point out that the burden of ill-health imposed by mental disorders is considerable. Nearly 60,000 individuals a year are admitted for the first time for treatment of mental problems and almost five million days of mental health care are provided in institutions.

The health problems with which Canadians live on a daily basis are quite different from those resulting in death. In order of prevalence, these conditions are arthritis and rheumatism, disorders of back, limbs and joints, hay fever and other allergies, skin allergies and skin disorders and dental trouble. Not surprisingly, the proportion of the population with at least one health problem increases with age: more than 85% of the elderly (65 years old and over) report at least one problem.

The prevalence of these problems varies with income level. Those in the lowest income group reported a markedly higher proportion of mental disorders, heart disease, bronchitis and emphysema, whereas hay fever and other allergies were recorded more frequently by the highest income group.

With respect to long term disability, 2% of the population or nearly half a million Canadians, are so severely disabled that they cannot carry out a major activity such as work, attending school or housework. Of those, over 300,000 are from 15 to 64 years old.

Regarding short term illness, Canadians experience an average of about 16 disability days each per year. In all age groups, women have higher rates of disability days than men.

On average, working persons miss slightly more than four days a year because of ill health. For Canada as a whole, this amounts to 37 million working days a year. By comparison, the total number of days lost because of strikes and lock-outs in 1978 was 7.5 million.

The five most frequently reported communicable diseases in Canada are venereal diseases, measles, salmonella, tuberculosis and hepatitis. At over 200 cases per 100,000 persons, venereal diseases are a significant health problem for public health officials. This rate is twice that recorded in the 1950s and 1960s.

Utilization of Health Services

During 1978-1979 Canadians made over 94 million visits to physicians' offices, an average of four visits each. The rate of visits to physicians was considerably higher in central Canada than in other regions in the country.

Frequency of visits to physicians varied substantially by region, sex and age. More than three-quarters of Canadians made at least one visit to a medical doctor during 1978-1979. Quebec residents visited medical doctors less often than Canadians in other regions. Women went to medical doctors more frequently than men. Frequency of visits followed a consistent pattern by age: young children (0-4 years) had more visits than older children (5-15) and young adults (15-24). Beyond this the frequency of consultations increased dramatically with age; the highest proportion of multiple visits were by the elderly.

Institutional data show that while the number of days spent by all patients in general and allied special hospitals increased about 15% from 40 million in 1970 to 46 million in 1977-1978, the number of days spent in mental hospitals for the same period decreased 75% (from 20 million to 5 million). During the past decade there has been a change in emphasis toward integrating mental patients into the community instead of isolating them in institutions.

Length of stay in hospital increases significantly by age. For patients up to 44 years of age, stays in hospital averaged about one week. Patients 45 to 64 years of age stayed in hospital an average of about 12 days, while the elderly spent nearly 25 days in hospital per stay.

Based on available data, the dental health of Canadians is better today than it has been in Canada's history. Although information is incomplete, it appears that there is considerable regional disparity in dental health. Among the provinces which have not fared as well as the rest of the nation are the Atlantic provinces and Quebec.

The frequency of consultations with a dentist during 1978-1979 was lowest in the Atlantic provinces where slightly more than 41% of the population reported one or more visits. The highest rate of utilization of dental services was in Ontario where just over 55% indicated one or more visits.

Since dental caries and periodontal disease are among the most common of all dental diseases faced by Canadians, the prevention of such diseases is particularly important. The three main preventive actions include water fluoridation, topical fluoride application and strict adherence to oral hygiene procedures. In Newfoundland, Prince Edward Island, New Brunswick, Quebec and British Columbia, a significantly large proportion of the population are not being serviced by fluoridation systems and are experiencing high rates of tooth decay.

Health Care System

Between 1968 and 1978, the number of physicians in Canada increased 50% while the population grew approximately 13%. The physician/population ratio reached 1:665 in 1978, three years earlier than the objective set out by the National Physician Requirements Committee established by Health and Welfare Canada.

Provincial distributions of physicians, including interns and residents, differed significantly in 1978. Nova Scotia, Quebec, Ontario, Manitoba and British Columbia had relatively high physician/population ratios. In each prov-

ince the supply of physicians was unevenly distributed, with the highest doctor/population ratios in the most populated urban centres.

The ratio of dentists to population also differed significantly by province. At one extreme, British Columbia had a ratio of 62 dentists for 100,000 people, while at the other, Newfoundland had 20 for 100,000.

Nurses make up about two-thirds of all health manpower in Canada. In 1970 there were 486 registered nurses employed in nursing for every 100,000 people. In 1978 this ratio was 683 for 100,000. More than 80% of employed nurses work in health care institutions.

The proportion of women physicians and dentists is increasing. In medicine, the percentage of women graduates in 1968 was about 11%, but in 1978 it was 30%. In dentistry, women accounted for slightly more than 7% of dental graduates in Canada in 1974; four years later the proportion had more than doubled to over 17%.

Although the number of hospital beds in Canada decreased about 5% between 1970 and 1977-1978, the number of beds in special care facilities, such as nursing homes and homes for the elderly, increased almost 20% between 1975 and 1977-1978.

Total health care expenditures in Canada amounted to well over $18 billion in 1979, an average of $785 per person. As a proportion of Gross National Product, health care expenditures remained relatively stable during the 1970's, being 7.2% in 1970 and 7.1% in 1979.

In-patient care in hospitals and related institutions represented 54% of total health expenditures, or $10 billion. Professional care, at over $4 billion or about 23% of the total, accounts for the second major portion. Of this more than two-thirds in 1979 was the cost of physician services.

In 1972 the lower 20% of income earners in Canada spent an average of $106 or 2.8% of their income on health care; while the top 20% of income earners spent more than four times as much ($455), it was still only 2.3% of their income. In 1978 the lowest income families spent 2.1% of their income on health, compared with 1.7% spent by those earning at the highest levels.

In 1968 the gap between physician and dentist average earnings was 32%; in 1978 it had narrowed to 12%. Physicians, nonetheless, continued to lead dentists, lawyers and accountants as the highest paid professionals in 1978.

Chapter I

Population

POPULATION

Whenever health is being discussed in the development of health policy, for example, statistics form an integral part of the discussion. Reference is often made to the exposure of individuals to certain risks, as well as their health status and their use of health services, to some extent a consequence of this exposure. These various aspects are closely related to certain population characteristics, particularly **sex and age**;[1] hence the importance of a thorough knowledge of the population served by the health system and the trends marking its growth, at all geographic levels.

Structure and Rate of Growth

While Canada's population is among the youngest of the industrialized nations, the trend towards aging is well under way. The triangular shape of the population pyramid in 1976 (Figure I) indicates Canada has a rather young population, but the narrowing at the base shows an increasing proportion of older people, the decline in fertility being the primary cause. Currently accompanied by a decline in immigration, this has repercussions both on the rate of growth of Canada's population and its age structure (Figure 1 and Table 1), two rather significant concerns for health resource planners and those who are interested in the health field.

In the coming years, planning of health resources will therefore be affected to an equal if not greater degree by changes in population structure as changes in the total population. This can be illustrated briefly using the example of hospital patient-days: under conditions observed in 1975, it was estimated that the elderly would have accounted for 32% of total hospital patient-days in 1951 compared with 60% in 2031, despite the fact that in those two years they respectively represented only 7.8% and 20.2% of the population (Table 2).

The specific role played by fertility should be noted. Its level and trend determine both the age structure and the pattern of population growth as the excess of births over deaths constitutes the greater part of population change.

Changes in fertility also have repercussions on the health field. Studies conducted by Japanese researchers in particular have indicated that the sharp drop in fertility following the beginning of the 1960's may have had a favourable impact on health.[2] During this period of low

TABLE 1. Changing Age Structure of the Population by Sex, Canada, 1951-2001

Sex and age	1951	1976	2001
		%	
Male:			
0 - 14 years	30.6	26.4	20.0
15 - 64 "	61.6	66.0	70.2
65 years and over	7.8	7.7	9.8
Total	100.0	100.0	100.0
Female:			
0 - 14 years	30.1	24.9	18.5
15 - 64 "	62.2	65.3	67.3
65 years and over	7.7	9.8	14.3
Total	100.0	100.0	100.0
Both sexes:			
0 - 14 years	**30.3**	**25.6**	**19.2**
15 - 64 "	**61.9**	**65.7**	**68.7**
65 years and over	**7.8**	**8.7**	**12.1**
Total	**100.0**	**100.0**	**100.0**

Source: Statistics Canada, 1951 and 1976 Censuses of Canada, and projection 4 from "Population projections for Canada and the provinces, 1976-2001", Catalogue 91-520, Ottawa, February 1979.

TABLE 2. Rate of Population Growth, Aging and Percentage of Hospital Patient-days, Attributed to Persons Aged 65 and Over, Canada, 1951-2031

	Total population		Persons aged 65 and over	
Year	Number[1]	Average annual rate of growth during the period	Population[1]	Hospital patient-days[2]
	thousands	%	as a % of the total	
1951	14,009		7.8	32.7
1976	22,993	2.0	8.7	38.1
2001	28,793	0.9	11.9	46.3
2031	30,935	0.2	20.2	60.2

[1] According to the 1951 and 1976 Censuses of Canada and the population projection used in **Lefebvre, L.** *et al., op. cit.,* Table A.1.

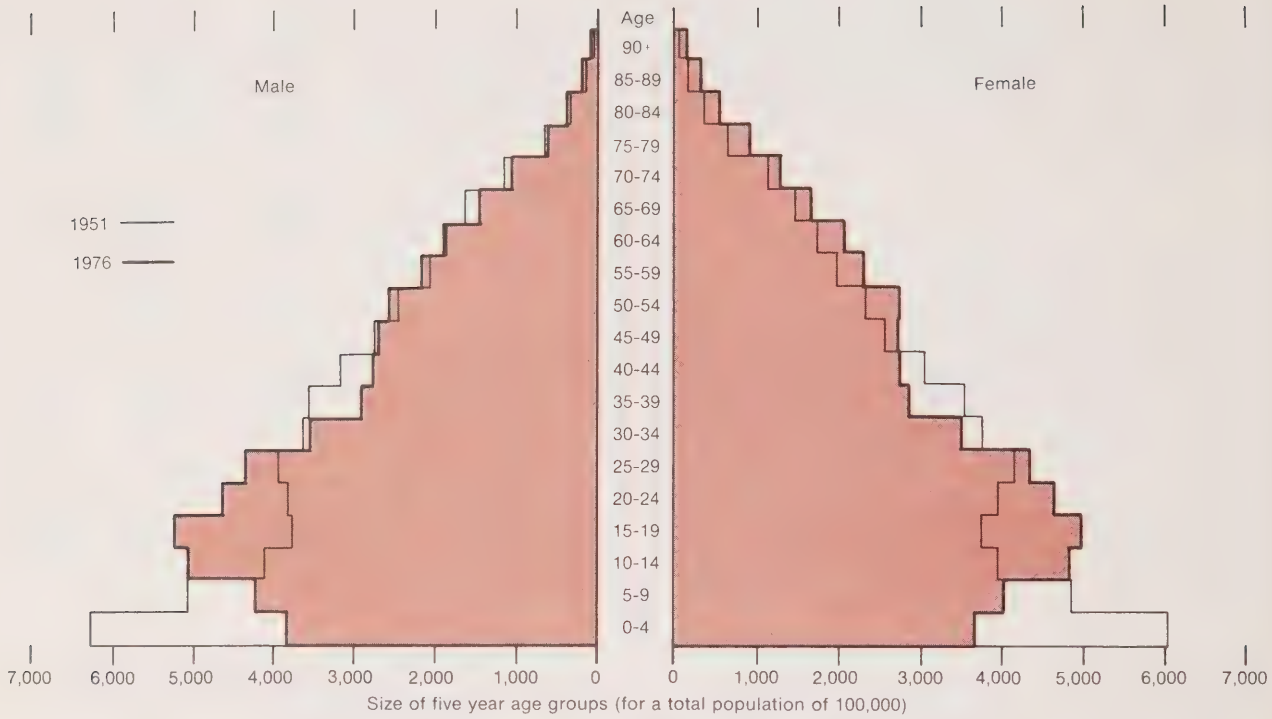
[2] Hospitalization rates and average length of stay in hospitals used here are those observed in 1975. See **Lefebvre, L.** *et al., op. cit.,* Tables 3 and 5.

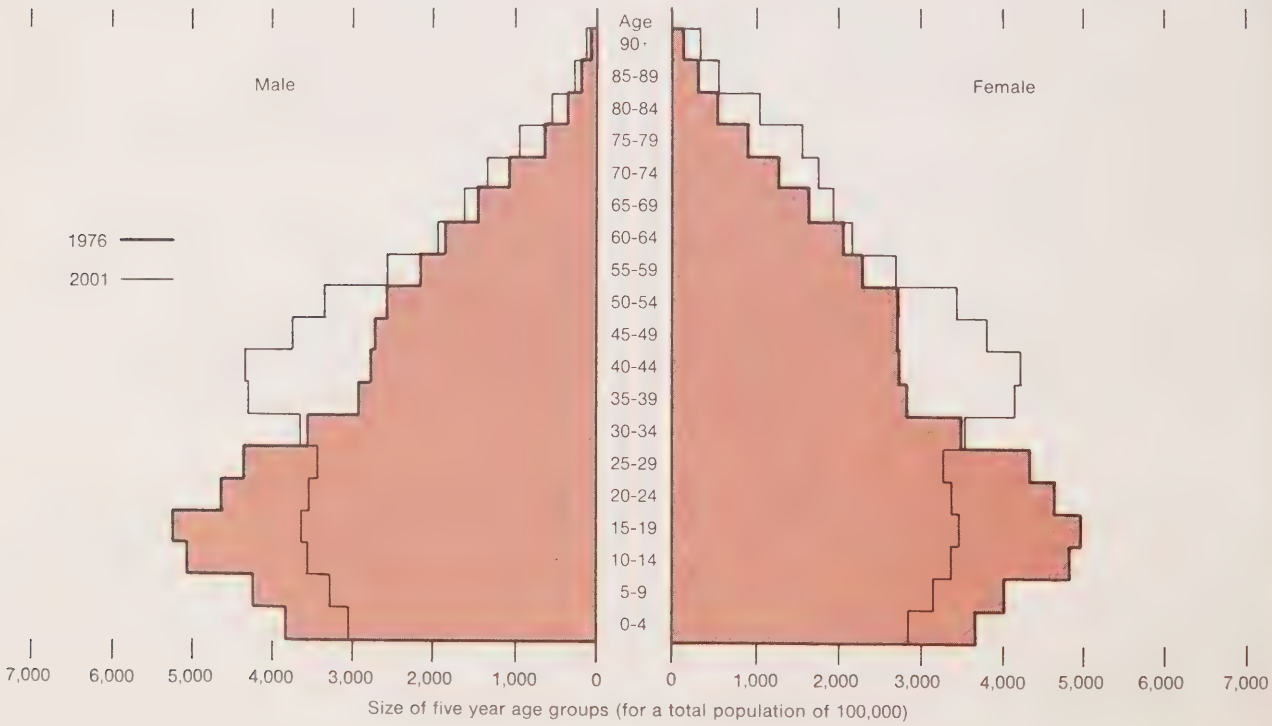
[1] Four recent studies deal with the relationship between population change and the utilization of health services. See: **Boulet, J.-A., and Grenier, G.,** *Health Expenditures in Canada and the Impact of Demographic Changes on Future Government Health Insurance Program Expenditures* (Discussion paper No. 123), Ottawa, Economic Council of Canada, October 1978, 98 pages; **Lefebvre, L., Zsigmond, Z., and Devereaux, M.,** *A Prognosis for Hospitals*, Statistics Canada, Catalogue 83-520E Occasional, Ottawa, November 1979, 92 pages; **Angus, D. E., Lefebvre, L. A. and Strohmenger, C.,** "An Analysis of Hospital Expenditures in Canada", Statistics Canada, Catalogue 83-522E Occasional, Ottawa, March 1982, 66 pages and **Strohmenger, C.,** "Hospital Expenditures During the Life Cycle: a Health Care Cost Indicator", paper presented at the *American Public Health Association Meeting*, Montréal, November 14-18, 1982.

[2] On this subject, see **Matsunaga, F.**, "Possible Genetic Consequences of Family Planning", *Journal of the American Medical Association*, Vol. 198, 1966, pp. 533-540; and by the same author "Measures Affecting Population Trends and Possible Genetic Consequences", *Proceedings of the World Population Conference*, Vol. 2 (Belgrade, 1965), New York, United Nations, 1967, pp. 502-506 and also **J.-M. Bernard**, "La mortalité infantile et périnatale au Québec (1965-1974): importance de l'âge maternel et de la parité", *Cahiers québécois de démographie*, Vol. 7, No. 3 Special, December 1978, pp. 25-54.

Figure I

Change in Canada's Population Pyramid, 1951-2001





Source: Statistics Canada, 1951 and 1976 Censuses of Canada, and projection 4 from "Population projections for Canada and the provinces, 1976-2001", catalogue 91-520.

fertility, many of the risks associated with the reproductive process disappeared or became less pronounced. However, new concerns reflecting the organization and distribution of health services, such as family planning, treatment of sterility,[3] sterilization, abortion, and medical supervision during the perinatal period, have replaced them.

Characteristics

Since a large proportion of present-day health problems are linked to lifestyles and the environment, it is important to distinguish individuals by their geographic and socio-economic characteristics.[4] Among other things, such information permits identification of the population groups most exposed to certain risks, and facilitates implementation of prevention programs, detection of health problems, and organization and distribution of health care services.[5]

The following are a few specific illustrations of demographic factors which may help health planners:

- The proportion of persons living alone, particularly the aged, must be considered in organizing the health care system; this proportion has more than doubled over the last 25 years (Table 3).
- Growth of urbanization has repercussions on the variety of health care services available and their accessibility. Those who opt for an urban lifestyle benefit from a concentration of services in urban areas.
- A large number of persons working in a particular industry or belonging to a given occupational class within a given area or region constitutes another type of population concentration. This population may be characterized by risk factors related to their industry capable of producing occupational health hazards. Prevention and detection of these health problems require appropriate health personnel and facilities.

Conclusion

Thus, the type and magnitude of the risks to which persons are exposed, as well as their health status, are closely related to some of their demographic and socio-economic characteristics. The implementation of programs for prevention and detection of health problems and distribution of health care services therefore requires a thorough knowledge of the population served.

TABLE 3. Percentage of The Elderly Age 65 and Over Living Alone, Canada, 1951-1976

Year	Male	Female	Total
		%	
1951[1]	–	–	9.2
1961	9.4	15.2	12.4
1971	11.1	24.3	18.4
1976	11.9	28.9	21.5

[1] Not available by sex.

Source: Table VI, page 25, in **Harrison, B.,** *Living Alone in Canada: Demographic and Economic Perspectives,* Catalogue 98-811, Statistics Canada, Ottawa, June 1981, and the 1951, 1961, 1971 and 1976 Censuses of Canada.

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[3] Couples are having fewer children, but rare indeed is the couple that does not want at least one child. For a discussion of the observed trends, see **Strohmenger, C. and Lavoie, Y.,** "Contribution des générations à leur renouvellement: quelques inégalités suivant le niveau d'instruction, d'après le recensement du Canada de 1971", *Cahiers québécois de démographie*, Vol. 5, No. 3 Special, December 1976, pp. 279-305. and **Strohmenger, C. and Lavoie, Y.,** "L'infécondité au Canada: niveau et tendances", paper presented at the *50th ACFAS Conference* (Demography Section), Université du Québec à Montréal, May 12-14, 1982. A recent fertility study deals with the desired number of children as indicated by respondents: see **Henripin, J., Huot, P.-M., Marcil-Gratton, N. and Laplerre-Adamcyk, E.,** *Les enfants qu'on n'a plus au Québec*, Presses de l'Université de Montréal, 1981, 410 pages.

[4] For information on differential morbidity, see **Health and Welfare Canada** and **Statistics Canada,** *The Health of Canadians: Report of the Canada Health Survey*, Catalogue 82-538E, Statistics Canada, Ottawa, June 1981, Chapter 6. The social disparities in mortality are discussed briefly in **Russell Wilkins**, *Health Status in Canada, 1926-1976*, Occasional Paper No. 13, Montreal, Institute for Research on Public Policy, May 1980, pp. 20-24; see also **Wigle, D. and Mao, Y.,** *Urban Mortality in Canada by Income Level*, Health Protection Branch, National Health and Welfare Canada, 1980.

[5] It is this type of concern which guided the authors of the *Dossier démographique et socio-sanitaire des départements de santé communautaire du Montréal métropolitain* (study conducted by **Jaël Mongeau and Gérald Lescarbeault**, of the INRS - Urbanization, in cooperation with the Metropolitan Montreal DSC's), November 1980, 2 volumes. See also **Ouellet, F. and Lachapelle, J.-F.,** "Le rôle de la démographie dans le domaine de la santé", *Cahiers québécois de démographie*, Vol. 7, No. 3 Special, December 1978, pp. 5-23.

Chapter II

Determinants of Health Status

DETERMINANTS OF HEALTH STATUS

The health field concept developed in Marc Lalonde's "*A New Perspective on the Health of Canadians*", describes four factors which influence health status:

Lifestyle: consists of the aggregation of decisions by individuals which affect their health and over which they more or less have control.

Environment: includes all those matters related to health which are external to the human body and over which the individual has little or no control.

Human Biology: includes all those aspects of health, both physical and mental, which are developed within the human body as a consequence of the basic biology of man and the organic makeup of the individual.

Health Care Organization: consists of the quantity, quality, arrangement, nature and relationships of people and resources in the provision of health care.

Thus a person's smoking habits, the city in which he lives, his parent's predisposition to disease, health care facilities and health personnel available could all affect his health status.

This chapter focuses primarily on the lifestyle component, those aspects over which the individual has some control. Drug use has been included here to remind the reader of its influence upon health status. Risks associated with the environment and occupation have not been dealt with as comprehensive national data do not exist at this time; this is not to minimize the importance of these topics but a recognition of the lack of data. Also not discussed are the effects on health status of political and economic initiatives such as motorcycle helmet legislation, laws on drunken driving, taxes and restrictions on alcohol and cigarettes, subsidies for gasoline and/or public transit, and pricing of food.

Although information is presented on a number of different determinants of health status, complex interrelationships between individual risk factors have not been explored. What has been shown represents exposure to risk. In many cases the time between the exposure and the onset of a condition is quite lengthy. Thus the data presented here, for the most part, do not reflect current health status but rather potential health problems.

ALCOHOL

Alcohol and Health

When consumed in moderation, alcoholic beverages would not seem to pose a health hazard.[1] But beyond a certain level, which varies with the individual, the absorption of alcohol becomes harmful.

While drunkenness increases primarily the risks of morbidity and mortality due to accidents, particularly traffic accidents, alcoholism, the "dependence" on alcohol, has deeper consequences. It results in a deterioration of an individual which steadily ostracizes him from social and professional life and victimizes those around him prior to his becoming a victim.[2] Thus the alcoholic is exposed to a wide variety of other risks, in addition to traffic accidents, which may damage his physical and mental health, such as cirrhosis of the liver, the onset of various cancers, social conflicts (with family, among others), occupational hazards (industrial accidents, drop n performance, loss of employment), alcoholic psychoses, suicide, etc.

Morbidity and Mortality

It is difficult to quantify morbidity and mortality due to alcoholism, which is more often an indirect cause of illness and death than a direct one.

There were an estimated 635,000 alcoholics in 1978, or one adult drinker in 20; this total has more than doubled since 1965. An estimated 1.4 million persons, or one adult drinker in 10, now suffer from an alcohol-related handicap.[3]

As for mortality, data indicate that in 1978 alcohol consumption was the direct cause of 2,520 deaths and the indirect cause of 5,668 others (traffic accidents, falls, etc.). Furthermore, there is evidence that alcohol may have played a role in 10,142 other deaths. A total of more than 18,000 deaths in 1978,[4] or 10.9% of all deaths in Canada in that year, have therefore been linked with alcohol consumption.[5]

Consumption: Level and Trends

At various times and in various countries, efforts have been made to limit the use of alcohol. The consumption of alcohol has nevertheless increased considerably over the last 30 years in countries for which statistics are available,[6]

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[1] Some studies have even linked moderate alcohol consumption to good health status. *See for example* **Belloc, N. B.**, "Relationship of Health Practices and Mortality", *Preventive Medicine*, Vol. 2, 1973, pp. 67-81, and **Belloc, N.B. and Breslow, L.**, "Relationship of Physical Health Status and Health Practices", *Preventive Medicine*, Vol. 1, 1972, pp. 409-421.

[2] **J. Le Magnen,** "L'alcoolisme", *La Recherche*, Vol. 11, 115, October 1980, p. 1182, See also **World Health Organization,** *Problems Related to Alcohol Consumption*, Technical Report No. 650, Geneva, WHO, 1980, 72 pages.

[3] **Expert Committee on Alcohol Statistics.** *Special Report on Alcohol Statistics* (Summary Version), Catalogue No. H39-12/1981, Health and Welfare Canada, Ottawa, 1981, p. 13.

[4] *Idem*, p. 15.

[5] In one study, it was conservatively estimated that 6.4% of the deaths and 10% of the potential years of life lost in 1974 between the 1st and 70th birthdays were attributable to excessive alcohol consumption. See **B. Ouellet, J.-M. Romeder and J.-M. Lance**, *Premature Mortality Attributable to smoking and Hazardous Drinking in Canada*, Volume I, Staff Paper 77-5, Long Range Health Planning Branch, Health and Welfare Canada, November 1977, Table 17.

[6] This development is especially disturbing in view of the fact that a relationship has been established between a population's average consumption of alcohol and its proportion of excessive drinkers. On this subject, see **Popham, R.**, "The Jellinek Alcoholism Estimation Formula and its Application to Canadian Data", *Quarterly Journal of Studies on Alcohol*, 17, 1956, pp. 559-593.

except in France where its level was already very high. However, the statistics presented in Table 4 show that in general, consumption has levelled off since 1975. Canadians, whose consumption has doubled since 1950, are average among the countries selected.

TABLE 4. Average Annual Consumption of Absolute Alcohol, by Litres Per Person, Selected Countries, 1950-1979

Country	1950	1955	1960	1965	1970	1975	1979
	litres of absolute alcohol						
France	18.7	20.3	19.0	18.5	17.4	17.1	15.8
West Germany	3.3	5.3	7.5	10.2	11.5	12.5	12.8
Italy	9.5	12.1	12.5	13.3	14.2	13.3	12.2
Netherlands	2.1	2.1	2.6	4.2	5.6	8.8	9.3
Canada	4.4	4.7	4.9	5.6	6.5	8.4	8.7
United States	5.5	5.2	5.3	5.8	6.9	7.9	8.5
United Kingdom	4.0	3.9	4.3	4.8	5.4	7.0	7.9
Sweden	3.9	4.3	4.0	4.7	5.8	6.4	6.0
Norway	2.2	2.3	2.6	2.8	3.6	4.3	4.4

Source: **Brown, M. and Wallace, P.,** *International Survey. Alcoholic Beverage Taxation and Control Policies* (Fourth Edition), Ottawa, Brewers Association of Canada, November 1980.

The increase in alcohol consumption during 1950-1979 was accompanied by a change in consumption patterns. Wines and spirits accounted for a significantly increased proportion of the total consumption, at the expense of beer (Table 5).

TABLE 5. Percentage Distribution of Pure Alcohol Consumption by Type of Beverage, Canada, 1950-1979

Year	Spirits	Beer	Wine	Total
	per cent			
1950	29.0	64.9	6.1	100.0
1960	31.1	61.9	7.0	100.0
1970	33.3	56.9	9.8	100.0
1979	37.2	50.6	12.2	100.0

Source: **Brown, M. and Wallace, P.,** *International Survey. Alcoholic Beverage Taxation and Control Policies* (Fourth Edition), Ottawa, Brewers Association of Canada, November 1980, Appendix I,

Table 6 provides information on the level of alcohol consumption by province, and type of beverage. Canadian adults consume an average of 11.5 litres[7] of pure alcohol a year; the volume is higher than average in Alberta, British Columbia and the territories. Beer accounts for close to half the national consumption, followed closely by spirits. Wine represents nearly 15% of the alcohol consumed. Beer is the predominant beverage east of Manitoba, but spirits lead in the territories and western provinces.

TABLE 6. Average Annual Consumption of Absolute Alcohol Per Adult (15 Years and Over), by Type of Drink, Canada and Provinces, 1978-1979

Province	Beer	Wine	Spirits	Total
	litres			
Newfoundland	6.2	0.5	3.9	10.6
Prince Edward Island	5.2	0.8	5.1	11.1
Nova Scotia	4.9	1.0	4.4	10.3
New Brunswick	5.1	0.8	3.4	9.3
Quebec	6.1	1.9	2.8	10.8
Ontario	5.6	1.6	4.4	11.6
Manitoba	4.5	1.3	5.1	10.9
Saskatchewan	4.7	0.9	4.6	10.2
Alberta	5.0	1.8	6.3	13.1
British Columbia	4.7	2.6	5.9	13.2
Yukon	8.6	3.0	9.7	21.3
Northwest Territories	5.5	1.5	7.1	14.1
CANADA	**5.5**	**1.7**	**4.3**	**11.5**

Source: Calculated from **Statistics Canada**, *The Control and Sale of Alcoholic Beverages in Canada, 1978*, Catalogue 63-202 Annual, Ottawa, November 1980, Tables 8 to 8C, using the following pure alcohol contents: beer 5%, wine 16% and spirits 40%.

Alcohol Consumption and Population Characteristics

The above quantities are derived from sales statistics, which indicate average consumption only. To determine the characteristics of persons according to their consumption patterns, it is necessary to use surveys; the Canada Health Survey (1978-1979) was relatively recent and collected detailed data from residents of each province.[8]

Table 7 shows that approximately two-thirds of the adult population consumes an alcoholic beverage at least once a month[9] (three of every four men as compared with slightly more than one of every two women). Over the age of 20, the proportion of "current drinkers" appears to decrease with age but is still greater among men. The same trend is present among persons who consume an alcoholic beverage at least 14 times per week, but the difference between sexes is more pronounced. Such data must be interpreted with care. A temptation exists to assume that the proportion of "current drinkers" decreases as they grow older. Table 7 simply provides information on persons of different ages observed at a given point in time. Considering for example all respondents aged 15-19 at the time of the survey, there is nothing to indicate that the proportion of "current drinkers" will decrease as they grow older; there is indeed some possibility that the reverse might occur.

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[7] This figure does not agree with that of Table 5: in Table 6, consumption is calculated using the adult population (age 15 and over) as the denominator, whereas in the international comparisons the denominator was the total population.

[8] See *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, pp. 23-42. Also worth consulting are the *Canadian Facts Survey*, the results of which were analysed in **McGregor, Betty**, "Alcohol Consumption in Canada - Some Preliminary Findings of a National Survey in Nov.-Dec. 1976", Non-medical use of Drugs Directorate, National Health and Welfare Canada, July 1978.

[9] In other words, they are "current drinkers". One drink equals a small bottle of beer (12 ounces), a small glass of wine (4-5 ounces) or a glass of hard liquor or spirits (1-1.5 ounces).

TABLE 7. Population 15 Years and Over by Type of Drinker and Weekly Volume of Alcohol Consumed, by Age and Sex, Canada, 1978-1979

		Type of drinker										
						Current drinkers and weekly volume of alcohol consumed						
		Total	Never drank	Former drinker	Occasional drinker	Total	Less than one drink	1-6 drinks	7-13 drinks	14 drinks and over	Weekly volume unknown	Type of drinker unknown
		in thousands										
Age 15 and over:												
Both sexes	No.	**17,492**	**2,008**	**653**	**2,642**	**11,418**	**1,352**	**4,585**	**2,306**	**2,092**	**1,082**	**771**
	%	**100.0**	**11.5**	**3.7**	**15.1**	**65.3**	**7.7**	**26.2**	**13.2**	**12.0**	**6.2**	**4.4**
Male	No.	**8,584**	**584**	**377**	**841**	**6,453**	**580**	**2,137**	**1,467**	**1,667**	**603**	**329**
	%	**100.0**	**6.8**	**4.4**	**9.8**	**75.2**	**6.8**	**24.9**	**17.1**	**19.4**	**7.0**	**3.8**
Female	No.	**8,907**	**1,424**	**276**	**1,801**	**4,965**	**772**	**2,448**	**839**	**425**	**480**	**442**
	%	**100.0**	**16.0**	**3.1**	**20.2**	**55.7**	**8.7**	**27.5**	**9.4**	**4.8**	**5.4**	**5.0**
15-19:												
Male	No.	1,187	188	16	163	721	120	267	132	149	52	100
	%	100.0	15.8	1.3	13.7	60.7	10.1	22.5	11.2	12.6	4.4	8.4
Female	No.	1,146	238	36	212	597	105	272	116	63	41	62
	%	100.0	20.8	3.1	18.5	52.1	9.1	23.7	10.2	5.5	3.6	5.4
20-24:												
Male	No.	1,106	38	23	63	965	81	283	230	343	28	18
	%	100.0	3.4	2.1	5.7	87.2	7.3	25.5	20.8	31.0	2 5	1.6
Female	No.	1,108	79	29	187	789	147	403	131	90	18	24
	%	100.0	7.2	2.6	16.9	71.1	13.2	36.4	11.8	8.1	1.6	2.2
25-44:												
Male	No.	3,230	109	114	318	2,626	188	910	628	699	202	63
	%	100.0	3.4	3.5	9.8	81.3	5.8	28.2	19.4	21.6	6.2	1.9
Female	No.	3,242	270	91	719	2,073	318	1,106	355	162	132	89
	%	100.0	8.3	2.8	22.2	63.9	9.8	34.1	10.9	5.0	4.1	2.8
45-64:												
Male	No.	2,174	122	136	175	1,664	131	554	371	390	217	77
	%	100.0	5.6	6.2	8.1	76.5	6.0	25.5	17.1	18.0	10.0	3.6
Female	No.	2,279	449	74	438	1,174	146	550	195	93	191	144
	%	100.0	19.7	3.2	19.2	51.5	6.4	24.1	8.6	4.1	8.4	6.3
65 and over:												
Male	No.	887	127	89	122	478	60	124	105	85	104	71
	%	100.0	14.3	10.0	13.8	53.9	6.7	13.9	11.9	9.6	11.8	8.0
Female	No.	1,132	388	45	245	332	57	117	42	18	97	122
	%	100.0	34.2	4.0	21.6	29.3	5.0	10.4	3.7	1.6	8.6	10.8

Source: Health and Welfare Canada and Statistics Canada, The Health of Canadians: Report of the Canada health Survey, Catalogue 82-538E, Ottawa, June 1981, Table 1.

The "have never drunk" category is of particular interest as it is the one group which can only diminish in size as its members grow older. This proportion is smaller among young persons (aged 20-24) than among their elders, the difference being pronounced among females. These results indicate that the number of persons, especially females, never exposed to the risks of alcohol consumption is declining from the older generations to the younger ones.

The proportion of regular drinkers varies by region. It increases from east to west (approximately one of every two adults in the Atlantic provinces, three of four in British Columbia). The proportion of those who consume an alcoholic beverage at least 14 times per week is also higher in the West than in the East (Table 8).

Other factors such as major activity and income distinguish drinkers from non-drinkers. Three of four persons who have a job drink regularly, but only one of two homemakers, students or retired persons (Table 9). Income also is a determining factor: the proportion of regular drinkers is significantly higher in the higher income groups, regardless of sex (Table 10).

TABLE 8. Percentage Distribution of Population 15 Years and Over by Type of Drinker and Weekly Volume of Alcohol Consumed, Canada and Regions, 1978-1979

Region	Total	Never drank	Former drinker	Occasional drinker	Current drinkers and weekly volume of alcohol consumed						Type of drinker unknown
					Total	0	1-6	7-13	14+	Unknown	
Canada	100.0	11.5	3.7	15.1	65.3	7.7	26.2	13.2	12.0	6.2	4.4
Atlantic	100.0	19.6	5.4	13.3	54.7	9.9	20.1	9.0	8.2	7.4	7.0
Quebec	100.0	10.6	3.2	18.5	63.4	7.9	29.1	10.8	10.1	5.6	4.3
Ontario	100.0	11.8	3.3	14.7	65.4	7.5	25.1	14.5	12.1	6.3	4.7
Prairies	100.0	9.7	4.3	14.4	68.5	6.8	27.8	14.3	13.6	5.9	3.1
British Columbia	100.0	8.4	4.4	10.5	73.2	-	25.5	16.7	16.8	-	3.5

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit., Table 2.*

TABLE 9. Population 15 Years and Over by Type of Drinker and Weekly Volume of Alcohol Consumed, by Major Activity, Canada, 1978-1979

Major activity		Type of drinker										
		Total	Never drank	Former drinker	Occasional drinker	Current drinkers and weekly volume of alcohol consumed						Type of drinker unknown
						Total	Less than one drink	1-6 drinks	7-13 drinks	14 drinks and over	Weekly volume unknown	
		in thousands										
Total	No.	**17,492**	**2,008**	**653**	**2,642**	**11,418**	**1,352**	**4,585**	**2,306**	**2,092**	**1,082**	**771**
	%	**100.0**	**11.5**	**3.7**	**15.1**	**65.3**	**7.7**	**26.2**	**13.2**	**12.0**	**6.2**	**4.4**
Working	No.	9,114	535	303	1,049	6,993	633	2,724	1,536	1,542	558	235
	%	100.0	5.9	3.3	11.5	76.7	6.9	29.9	16.9	16.9	6.1	2.6
Housework	No.	4,240	753	159	963	2,117	346	1,008	338	155	270	248
	%	100.0	17.8	3.8	22.7	49.9	8.2	23.8	8.0	3.6	6.4	5.8
School	No.	2,209	406	42	360	1,258	227	550	224	190	67	142
	%	100.0	18.4	1.9	16.3	57.0	10.3	24.9	10.1	8.6	3.0	6.4
Retired	No.	1,359	256	111	199	673	91	187	146	109	141	120
	%	100.0	18.8	8.2	14.6	49.5	6.7	13.7	10.7	8.0	10.4	8.9
Others	No.	571	59	38	71	377	55	116	63	97	46	26
	%	100.0	10.4	6.6	12.5	66.1	9.7	20.3	11.1	16.9	8.1	4.5

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 2.

TABLE 10. Population 15 Years and Over by Type of Drinker and Weekly Volume of Alcohol Consumed, by Sex and Economic Family Income Quintiles, Canada, 1978-1979

Economic family income quintiles		Type of drinker						
		Total	Occasional and non-drinkers	Current drinkers and weekly volume of alcohol consumed				Type of drinker unknown
				Total	Less than 7 drinks	7 drinks and over	Weekly volume unknown	
		in thousands						
Both sexes:								
Total	No.	**17,492**	**5,303**	**11,418**	**5,937**	**4,399**	**1,082**	**771**
	%	**100.0**	**30.3**	**65.3**	**33.9**	**25.1**	**6.2**	**4.4**
First quintile	No.	**3,025**	**1,235**	**1,565**	**877**	**476**	**212**	**225**
	%	**100.0**	**40.8**	**51.7**	**29.0**	**15.7**	**7.0**	**7.4**
Second quintile	No.	**2,965**	**1,057**	**1,736**	**880**	**628**	**228**	**172**
	%	**100.0**	**35.6**	**58.6**	**29.7**	**21.2**	**7.7**	**5.8**
Third quintile	No.	**3,018**	**958**	**1,937**	**1,039**	**707**	**191**	**123**
	%	**100.0**	**31.8**	**64.2**	**34.4**	**23.4**	**6.3**	**4.1**
Fourth quintile	No.	**3,505**	**992**	**2,377**	**1,219**	**988**	**170**	**137**
	%	**100.0**	**28.3**	**67.8**	**34.8**	**28.2**	**4.9**	**3.9**
Fifth quintile	No.	**4,026**	**780**	**3,170**	**1,599**	**1,362**	**210**	**75**
	%	**100.0**	**19.4**	**78.7**	**39.7**	**33.8**	**5.2**	**1.9**
Income unknown	No.	**952**	**280**	**633**	**324**	**238**	**71**	**39**
	%	**100.0**	**29.4**	**66.4**	**34.0**	**25.0**	**7.5**	**4.1**
Male:								
Total	No.	8,584	1,802	6,453	2,716	3,134	603	329
	%	100.0	21.0	75.2	31.6	36.5	7.0	3.8
First quintile	No.	1,271	379	813	387	319	107	79
	%	100.0	29.8	64.0	30.5	25.1	8.4	6.2
Second quintile	No.	1,415	362	985	401	461	124	67
	%	100.0	25.6	69.6	28.3	32.5	8.8	4.8
Third quintile	No.	1,471	305	1,113	482	513	118	53
	%	100.0	20.7	75.7	32.7	34.9	8.0	3.6
Fourth quintile	No.	1,751	339	1,341	551	707	84	70
	%	100.0	19.4	76.6	31.5	40.4	4.8	4.0
Fifth quintile	No.	2,187	311	1,836	747	963	126	39
	%	100.0	14.2	84.0	34.2	44.0	5.8	1.8
Income unknown	No.	489	105	363	148	171	44	20
	%	100.0	21.5	74.3	30.3	35.1	9.0	4.2
Female:								
Total	No.	8,907	3,501	4,965	3,220	1,265	480	442
	%	100.0	39.3	55.7	36.2	14.2	5.4	5.0
First quintile	No.	1,754	856	752	490	157	105	146
	%	100.0	48.8	42.9	27.9	9.0	6.0	8.3
Second quintile	No.	1,549	694	751	479	168	104	104
	%	100.0	44.8	48.5	30.9	10.8	6.7	6.7
Third quintile	No.	1,547	653	824	557	193	73	70
	%	100.0	42.2	53.2	36.0	12.5	4.7	4.5
Fourth quintile	No.	1,755	652	1,035	668	281	87	67
	%	100.0	37.2	59.0	38.0	16.0	4.9	3.8
Fifth quintile	No.	1,838	469	1,334	851	399	83	36
	%	100.0	25.5	72.5	46.3	21.7	4.5	2.0
Income unknown	No.	463	175	269	176	66	27	19
	%	100.0	37.8	58.1	37.9	14.3	5.9	4.1

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 6.

Is there a relationship between drinking and mental health? Combining data obtained using Bradburn's scale[10] with data on consumption patterns yielded the results in Table 11. Essentially, it was found that apart from persons aged 15-19, the proportion of "current drinkers" is always larger for persons with a positive affect balance than among those with a negative affect balance. Obviously, it is impossible to come to any conclusions without some information on cause and effect.

Conclusion

Hence, in spite of its adverse effects on health, alcohol consumption has increased rapidly over the past decade; moreover, beverages with a high alcohol content are accounting for an increasing proportion of this consumption.

It is estimated that between 1970 and 1978 (*Special Report on Alcohol Statistics*), the number of alcoholics increased at an average annual rate of 7%. Recent surveys have revealed some disturbing trends: the increase in consumption is most pronounced among teenagers of both sexes, and more pronounced among females than among males.

Tobacco

While the use of tobacco is not new, it was not until the beginning of this century that cigarette smoking became widespread, resulting in an ever-increasing demand for tobacco.

Tobacco and Health

Tobacco consumption resulted in symptoms that were readily attributed to the toxicity of tobacco. But it took several decades to compile detailed evidence of the ill effects of smoking, particularly because of the generally late appearance of symptoms. Reports linking cigarette smoking to lung cancer began to appear in the 1920s but it was not until after World War II, when fatalities due to lung cancer were reaching epidemic proportions, that definitive follow-up studies were undertaken.[11]

Recently, a World Health Organization (WHO) Expert Committee analysed the most recent data and compiled the many years of existing data on the pathogenic role of tobacco. Only an overview is provided here.[12]

Among illnesses generally associated with smoking, cancers first come to mind. The vast majority of those affecting the lungs are due to smoking and, according to a WHO publication,[13] the causal nature of this relationship has been clearly demonstrated. Other types of cancer (oral cavity, larynx, esophagus, bladder, etc.) can also be attributed to tobacco use. Alcohol consumption acts synergistically with tobacco smoking to produce a number of cancers.

Perhaps less known to the public is the role of tobacco in the onset of cardiovascular diseases.[14] "Although cigarette smoking is only one of the numerous risk factors predisposing to ischaemic heart disease, it is one of the most important and the most susceptible to change".[15] In addition, the combined use of cigarettes and oral contraceptives considerably increases the risk of cardiovascular disease among females.

Furthermore, non-neoplastic bronchopulmonary diseases are more numerous and take longer to cure in smokers.

Smoking is also a source of problems in the work place. Many studies have shown higher rates of absenteeism and accidents (particularly fires and explosions) among smokers. Smokers are more susceptible to certain industrial diseases such as abestosis.

Unfortunately, the use of tobacco is not only injurious to the health of smokers. For example, among pregnant women who smoke, tobacco has noxious effects on the growth of the fetus.[16] One extensive survey cited by the WHO showed substantial excess perinatal mortality (28%) when the mother smoked.[17] Moreover, the children of smokers are forced to live in a smoke-filled environment. This involuntary inhalation of tobacco smoke is also the lot of many who live or work with smokers.

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[10] Bradburn's Affect Balance Scale was used as a general measure of individual's psychological well-being. Respondents were divided up into three groups: those whose feelings were predominantly positive, those whose feelings were predominantly negative and those in between these two extremes. On this subject, see *The Health of Canadians, op. cit.*, p. 129, and **Bradburn, N.M.,** *The Structure of Psychological Well-being*, Chicago, Aldine Publishing Co., 1969.

[11] The preceding is derived to a large extent from a paper prepared jointly by the Long Range Health Planning Branch and the Non-medical Use of Drugs Directorate: *Smoking and Health in Canada*, Staff Paper No. 77-3, Long Range Health Planning Branch, **Department of National Health and Welfare**, Ottawa, March 1977, pp. 7-9.

[12] The following observations on the pathogenic role of tobacco are taken from: **World Health Organization,** *Controlling the Smoking Epidemic* (Report of the WHO Expert Committee on Smoking Control), Technical Report Series, No. 636 (WHO, Geneva), 1979, pp. 9-29.

[13] *Weekly Epidemiological Record*, June 1979.

[14] It is important to note that tobacco causes more deaths through ischaemic heart disease than through cancer. See for example **Ouellet, B., Romeder, J.-M. and Lance, J.-M.,** *Mortality Attributable to Smoking and Hazardous Drinking in Canada*, Staff Paper No. 77-5, Long Range Health Planning Branch, Health and Welfare Canada, November 1977 (Vol. I) and March 1978 (Vol. II).

[15] *Controlling the Smoking Epidemic, op. cit.*, p. 19.

[16] See **Meyer, M., Jonas, B. and Tonascin, J.,** "Perinatal Events Associated with Maternal Smoking During Pregnancy", *American Journal of Epidemiology*, Vol. 103, 1976, pp. 464-476.

[17] *Controlling the Smoking Epidemic, op. cit.*, p. 25. It should be added that the children of mothers who smoke during pregnancy have a lower weight at birth than those of mothers who do not smoke; moreover, some studies suggest unfavorable effects on the child's long-term development. See United States, *The Health Consequences of Smoking for Women.* A report of the Surgeon General, **U.S. Department of Health, Education and Welfare**, Washington, 1980, pp. 224-237.

TABLE 11. Population 15 Years and Over by Type of Drinker, by Age and "Affect Balance Scale" Scores, Canada, 1978-1979

Affect balance scale scores		Type of drinker			
		Total	Current drinker	Occasional and non-drinkers	Unknown
		in thousands			
Age 15 and over:					
Total	No.	**17,492**	**11,418**	**5,303**	**771**
	%	**100.0**	**65.3**	**30.3**	**4.4**
Positive	No.	**7,956**	**5,383**	**2,299**	**273**
	%	**100.0**	**67.7**	**28.9**	**3.4**
Mixed	No.	**7,081**	**4,719**	**2,137**	**225**
	%	**100.0**	**66.6**	**30.2**	**3.2**
Negative	No.	**770**	**458**	**280**	**32**
	%	**100.0**	**59.5**	**36.4**	**4.1**
Unknown	No.	**1,686**	**858**	**587**	**241**
	%	**100.0**	**50.9**	**34.8**	**14.3**
15-19:					
Total	No.	2,333	1,318	853	162
	%	100.0	56.5	36.6	6.9
Positive	No.	951	518	370	64
	%	100.0	54.4	38.9	6.7
Mixed	No.	1,156	670	412	73
	%	100.0	58.0	35.7	6.3
Negative	No.	123	80	34	--
	%	100.0	65.3	27.7	--
Unknown	No.	103	50	37	17
	%	100.0	48.1	35.7	16.1
20-24:					
Total	No.	2,215	1,753	419	42
	%	100.0	79.2	18.9	1.9
Positive	No.	1,028	836	179	--
	%	100.0	81.4	17.4	--
Mixed	No.	1,006	804	188	--
	%	100.0	79.9	18.7	--
Negative	No.	92	57	34	--
	%	100.0	62.5	36.6	--
Unknown	No.	90	56	18	--
	%	100.0	62.6	20.5	--
25-44:					
Total	No.	6,472	4,699	1,621	152
	%	100.0	72.6	25.0	2.4
Positive	No.	3,087	2,318	724	46
	%	100.0	75.1	23.4	1.5
Mixed	No.	2,753	1,997	703	52
	%	100.0	72.5	25.6	1.9
Negative	No.	267	184	73	--
	%	100.0	68.9	27.5	--
Unknown	No.	365	201	120	44
	%	100.0	55.0	32.9	12.1
45-64:					
Total	No.	4,453	2,838	1,394	221
	%	100.0	63.7	31.3	5.0
Positive	No.	2,076	1,371	620	85
	%	100.0	66.0	29.9	4.1
Mixed	No.	1,562	1,012	507	43
	%	100.0	64.8	32.5	2.8
Negative	No.	180	102	71	7
	%	100.0	56.5	39.5	4.1
Unknown	No.	634	353	196	86
	%	100.0	55.6	30.9	13.5
65 and over:					
Total	No.	2,019	810	1,016	193
	%	100.0	40.1	50.3	9.6
Positive	No.	813	340	407	66
	%	100.0	41.8	50.0	8.2
Mixed	No.	604	236	326	42
	%	100.0	39.1	53.9	7.0
Negative	No.	108	35	68	--
	%	100.0	32.4	62.8	--
Unknown	No.	493	198	215	79
	%	100.0	40.2	43.7	16.1

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 10.

Consumption: Level and Trends

In spite of these effects, some of which the public are well aware, average tobacco consumption of persons aged 15 or over has increased steadily over all the years for which data are available. Among countries for which statistics are available, only the United States surpasses average Canadian consumption which is more than twice that of Sweden (Table 12). In Canada, average adult consumption seems to be levelling off among males while continuing to increase among females (Table 13).

TABLE 12. Average Annual Consumption of Cigarettes Per Adult, Selected Countries, 1935, 1950, 1965 and 1973

Country	1935	1950	1965	1973
	number			
United States	1,450	3,240	3,800	3,850
Canada	700	1,790	3,310	3,450
Switzerland	540	1,500	3,050	3,370
Japan	880	1,220	2,350	3,240
United Kingdom	1,590	2,180	2,680	3,230
Italy	450	660	1,540	1,930
France	530	930	1,510	1,920
Sweden	380	810	1,360	1,580

Source: Taken from Appendix A Table 1, *Controlling the Smoking Epidemic, op. cit.*, pp. 92-93.

TABLE 13. Average Annual Consumption of Cigarettes Per Adult (15 Years and Over), by Sex, Canada, 1931-1975

Five-year periods	Males	Females
	number of cigarettes	
1931-35	1,113	78
1936-40	1,480	177
1941-45	2,194	378
1946-50	2,817	640
1951-55	3,060	881
1956-60	4,058	1,452
1961-65	4,448	1,909
1966-70	4,426	2,255
1971-75	4,311	2,592

Source: Taken from Table 3 of the Study by **Todd, G.F.** *An Estimate of Manufactured Cigarette Consumption in Canada by Sex, Age and Cohort, 1921-1975*, Publication No. 1, WHO Collaborating Centre for Reference on the Assessment of Smoking Habits, Faculty of Mathematics, University of Waterloo, June 1979.

These are average figures; in reality, about one-third of Canadian adults (less than four of every 10 males and less than three of every 10 females[18]) smoked daily in 1979 (Table 14). Although there has been a general decline in the percentage of smokers, the 1979 figures reflected different patterns for men and women: the proportion of male smokers declined but the percentage of females who smoke on a daily basis has remained practically unchanged over the last 15 years. Despite the decline in adult regular smokers there seems to have been an increase in the number of cigarettes consumed daily.[19]

In terms of controlling smoking, the 15-19 year old group is of particular interest since smoking is a habit generally acquired early in life. Table 14 shows that after a significant decrease among males and an increase among females, the proportion of young male and female smokers has become relatively equal since 1975. In 1979, one quarter of the 15-19 age group smoked on a daily basis. This points out an important development: whereas among 15-19 year olds, male smokers outnumbered female smokers two to one in 1965, today there are equal proportions of smokers of both sexes.

TABLE 14. Proportion of Current Daily Cigarette Smokers by Age and Sex, Canada, 1965-1979

Age groups	1965	1970	1975	1977	1979
15 years and over:					
Males	54.6	48.9	43.3	40.8	38.6
Females	31.2	32.4	31.4	31.1	30.1
Both Sexes	42.8	40.6	37.3	35.9	34.2
15-19 years:					
Males	35.0	35.7	29.5	26.9	26.8
Females	18.7	24.9	27.4	26.7	26.0
Both Sexes	27.0	30.5	28.5	26.8	26.4

Source: **Statistics Canada**, *Tobacco Use in Canada*, Labour Force Survey Supplements, 1965-1979.

Smoking and Population Characteristics

The Canada Health Survey (1978-1979) provides recent and detailed information on the characteristics of Canadians according to their cigarette smoking habits.[20]

With the exception of the 15-19 age group, the proportion of smokers in the population increases[21] from the older cohort groups to the younger ones, for both sexes. However, although male smokers are more numerous, the disparity between the sexes diminishes with age, becoming almost nonexistent in the 15-19 age group. Essentially the same trends are characteristic of heavy smokers who smoke at least 23 cigarettes per day, except that the differences by sex are more pronounced (Table 15).

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[18] See **Health and Welfare Canada,** Smoking Habits of Canadians, 1965-1979, Technical Report No. 9, Health Protection Branch, Ottawa, December 1980, Table 11.

[19] *Idem*, p. 2.

[20] *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, pp. 45-67. As for the proportion of smokers in the population, significant discrepancies emerged between the results of the Canada Health Survey and those of the Survey of the Smoking Habits of Canadians. These discrepancies were attributed in the main to methodological differences (see pages 48-49 of the Report of the Canada Health Survey).

[21] This does not necessarily mean that the proportion of smokers declines as persons grow older (this distinction between the age effect and the cohort effect has already been stressed in the section on alcohol).

TABLE 15. Population 15 Years and Over by Type of Cigarette Smoker and Number of Cigarettes Smoked Daily, by Age and Sex, Canada, 1978-1979

		Type of cigarette smoker										
						Current daily smokers and number of cigarettes smoked daily						
		Total	Never smoked	Former smoker	Current occasional smoker	Total	1-12	13-22	23-32	33 and over	Number unknown	Type of smoker unknown
		in thousands										
Age 15 and over:												
Both sexes	No.	**17,492**	**5,393**	**3,941**	**557**	**6,525**	**1,803**	**2,393**	**1,626**	**552**	**152**	**1,076**
	%	**100.0**	**30.8**	**22.5**	**3.2**	**37.3**	**10.3**	**13.7**	**9.3**	**3.2**	**0.9**	**6.1**
Male	No.	**8,584**	**1,984**	**2,317**	**244**	**3,545**	**801**	**1,251**	**1,009**	**387**	**97**	**495**
	%	**100.0**	**23.1**	**27.0**	**2.8**	**41.3**	**9.3**	**14.6**	**11.8**	**4.5**	**1.1**	**5.8**
Female	No.	**8,907**	**3,409**	**1,624**	**313**	**2,981**	**1,002**	**1,142**	**617**	**164**	**55**	**581**
	%	**100.0**	**38.3**	**18.2**	**3.5**	**33.5**	**11.2**	**12.8**	**6.9**	**1.8**	**0.6**	**6.5**
15-19:												
Male	No.	1,187	511	167	43	383	169	154	39	--	--	83
	%	100.0	43.0	14.0	3.6	32.3	14.2	12.9	3.3	--	--	7.0
Female	No.	1,146	440	190	71	388	193	133	51	--	--	56
	%	100.0	38.4	16.6	6.2	33.9	16.9	11.6	4.4	--	--	4.9
20-24:												
Male	No.	1,106	298	188	39	541	139	198	156	41	--	40
	%	100.0	27.0	17.0	3.5	48.9	12.5	17.9	14.1	3.7	--	3.6
Female	No.	1,108	309	219	48	501	187	209	80	20	--	31
	%	100.0	27.9	19.8	4.3	45.2	16.9	18.9	7.2	1.8	--	2.8
25-44:												
Male	No.	3,230	694	845	104	1,440	217	524	482	199	18	146
	%	100.0	21.5	26.2	3.2	44.6	6.7	16.2	14.9	6.2	0.5	4.5
Female	No.	3,242	1,078	692	130	1,208	314	470	312	89	23	134
	%	100.0	33.3	21.4	4.0	37.2	9.7	14.5	9.6	2.7	0.7	4.1
45-64:												
Male	No.	2,174	330	752	40	918	180	290	289	130	29	134
	%	100.0	15.2	34.6	1.8	42.2	8.3	13.3	13.3	6.0	1.3	6.1
Female	No.	2,279	917	395	49	728	224	294	160	39	11	189
	%	100.0	40.2	17.3	2.1	32.0	9.8	12.9	7.0	1.7	0.5	8.3
65 and over:												
Male	No.	887	150	365	18	262	96	85	44	--	26	93
	%	100.0	16.9	41.2	2.0	29.5	10.8	9.5	4.9	--	3.0	10.4
Female	No.	1,132	665	127	15	156	84	37	14	--	--	169
	%	100.0	58.8	11.2	1.3	13.7	7.4	3.2	1.2	--	--	15.0

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 11.

It might be useful to examine the proportion of persons who have never smoked and thus have never been exposed of their own free will to the risks of smoking (Table 15). Considering persons aged 20 or over, a reverse trend by sex becomes apparent: among males, the proportion who never smoked rises from the older generation to the younger, whereas for females the opposite occurs. Again the two behavioural patterns converge, with the proportions becoming approximately equal for both sexes in the 15-24 age group. This does not bode well for women and confirms that the young are more subject to the risks of cigarette smoking than their elders.

The combined effects of tobacco and alcohol have already been noted.[22] Table 16 identifies persons who are susceptible to the risks of the joint consumption and shows that:

- the proportion of smokers is much higher among persons who drink regularly (i.e. at least once a month) than those who never drink or drink only occasionally. This percentage of smokers increases with alcohol consumption: the more one drinks, the more one is likely to be a heavy smoker (at least 23 cigarettes per day).
- 29% of the adult population are both current daily smokers and drinkers. Approximately 600,000 people in Canada are exposed to serious risk: those who smoke at least 23 cigarettes a day and consume an alcoholic beverage at least 14 times per week.

Conclusion

In summary, this overview of the data on cigarette consumption reveals that men are more likely to be smokers than women, but that since 1965, the proportion of male smokers has declined while the proportion of female smokers has remained relatively stable and even increased in the 15-19 age group. The sex differences in smoking behaviour are declining from the older generations to the younger and are almost non-existent in the 15-19 age group. This certainly does not bode well for the future, and certain traditionally male diseases, especially cancers and cardiovascular diseases, can be expected to become increasingly common among females.[23]

Activity and Fitness

While use of alcohol or tobacco has generally a negative effect upon health, participation in physical activity has positive health benefits.[24] These range from physiological effects, such as a decreased resting heart rate and weight reduction to social and psychological benefits, such as less stress and tension and an improved self image. While lacking definite proof, there is much evidence that regular physical activity can prevent or moderate the effects of ischaemic heart disease. Thus it is important to know the levels of physical activity in the population to develop programs to encourage physical activity.

There is a difference between physical activity and fitness. Physical activity here refers to how active individuals are in their homes, recreation and work, while fitness is a clinical measure of the body's capacity to use oxygen. Information on both was collected in the Canada Health Survey.

Physical Activity

The principal measure of physical activity used is the Physical Activity Index of the Canada Health Survey. This is the sum of the frequency of each activity in the previous two weeks multiplied by the average duration in minutes of each activity, and by the average energy expenditure for that activity. It is a good indicator of physical activity, but limited in that it does not require any particular mix of frequency, duration or intensity.

Physical Activity Index scores are reported in five categories, ranging from sedentary to very active.[25] A person would be classified as sedentary if, for example, the only reported physical activity in the last two weeks was making beds each day. If a two-week physical activity program included daily bed making, a daily walk, skiing twice, skating twice, shovelling snow twice, playing two games of squash and doing some carpentry, the physical activity score would be greater than 5,500 and the person would be classified as very active.

Physical activity, as measured by the Physical Activity Index, is not distributed evenly according to age and sex. Table 17 shows that the proportion of persons who are "very active" declines steadily with age. While 46% of men and 32% of women aged 15-19 are so classified, this proportion declines to only 11% of men and 5% of women aged 65 years and over in the "very active" category. This is to be expected in view of the general deterioration which is part of the aging process. Perhaps a refinement of the index could take this into account by defining "very active" differently for various age groups.

Variations in physical activity patterns are more extreme for men than women. There are significantly more men than women in both the "sedentary" and "very active" categories. Women are most likely to be "moderately inactive". This pattern is true for nearly all age groups. However, men aged 45-64 years are more likely to be sedentary than women of the same age (24% versus 14%), while many more men (27%) than women (16%) aged 20-24 years are very active.

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[22] On this subject, see **Belloc, N. and Breslow, L.,** "Relationship of Physical Health Status and Health Practices," *Preventive Medicine, Vol. 1, 1972,* pp. 409-421.

[23] Further information on this aspect can be obtained from an analysis by **Dufour, D. and Péron, Y.,** *Vingt ans de mortalité au Québec. Les causes de décès, 1951-1971,* Presses de l'Université de Montréal, 1979, pp. 112-114. See also *The Health Consequences of Smoking for Women, op. cit.*

[24] These are described in more detail in **Collishaw, McWhinnie and Salmon,** *Physical Activity in Canada,* Staff Paper 78-1, Long Range Health Planning, Health and Welfare Canada, July 1978.

[25] Details of the values associated with each category are given in *The Health of Canadians: Report of the Canada Health Survey, op. cit.* Most of the following section comes directly from this report.

TABLE 16. Population 15 Years and Over by Type of Cigarette Smoker and Number of Cigarettes Smoked Daily, by Type of Drinker and Weekly Volume of Alcohol Consumed, Canada, 1978-1979

		Type of cigarette smoker										
						Current daily smoker and number of cigarettes smoked daily						
		Total	Never smoked	Former smoker	Current occasional smoker	Total	1-12	13-22	23-32	33 and over	Number unknown	Type of smoker unknown
		in thousands										
Type of drinker:												
Total	No.	**17,492**	**5,393**	**3,941**	**557**	**6,525**	**1,803**	**2,393**	**1,626**	**552**	**152**	**1,076**
	%	**100.0**	**30.8**	**22.5**	**3.2**	**37.3**	**10.3**	**13.7**	**9.3**	**3.2**	**0.9**	**6.1**
Never drank	No.	2,008	1,336	194	25	316	137	98	61	16	--	138
	%	100.0	66.5	9.6	1.2	15.7	6.8	4.9	3.0	0.8	--	6.9
Former drinker	No.	653	110	229	--	263	48	99	58	42	16	41
	%	100.0	16.8	35.2	--	40.3	7.4	15.1	8.9	6.4	2.4	6.3
Occasional drinker	No.	2,642	1,006	623	106	819	232	303	204	58	22	88
	%	100.0	38.1	23.6	4.0	31.0	8.8	11.5	7.7	2.2	0.8	3.3
Current drinker	No.	11,418	2,732	2,830	414	4,988	1,344	1,835	1,286	431	92	454
	%	100.0	23.9	24.8	3.6	43.7	11.8	16.1	11.3	3.8	0.8	4.0
Current drinkers by weekly volume of alcohol:												
Less than 1 drink	No.	1,352	432	303	39	529	160	211	107	33	18	48
	%	100.0	31.9	22.4	2.9	39.2	11.9	15.6	7.9	2.4	1.3	3.6
1-6 drinks	No.	4,585	1,295	1,173	177	1,804	568	729	380	107	19	137
	%	100.0	28.2	25.6	3.9	39.3	12.4	15.9	8.3	2.3	0.4	3.0
7-13 drinks	No.	2,306	504	631	91	1,035	254	395	290	84	13	46
	%	100.0	21.9	27.3	3.9	44.9	11.0	17.1	12.6	3.6	0.6	2.0
14 drinks and over	No.	2,092	265	488	72	1,237	236	380	425	177	19	31
	%	100.0	12.7	23.3	3.4	59.1	11.3	18.2	20.3	8.4	0.9	1.5
Weekly volume unknown	No.	1,082	236	235	35	384	126	121	85	30	22	192
	%	100.0	21.8	21.7	3.3	35.5	11.6	11.1	7.8	2.8	2.1	17.8
Type of drinker unknown	No.	771	209	65	--	140	41	58	16	--	--	354
	%	100.0	27.1	8.5	--	18.1	5.3	7.5	2.1	--	--	45.9

Source: *The Health of Canadians: Report of the Canada Health Survey,op. cit.*, Table 22.

TABLE 17. Population 15 Years and Over by Level of Physical Activity, by Age and Sex, Canada, 1978-1979

		Level of physical activity						
		Total	Sedentary	Moderately inactive	Moderate	Moderately active	Very active	Unknown
		in thousands						
Age 15 and over:								
Both sexes	No.	**17,492**	**2,822**	**3,133**	**2,812**	**3,178**	**3,172**	**2,376**
	%	**100.0**	**16.1**	**17.9**	**16.1**	**18.2**	**18.1**	**13.6**
Male	No.	**8,584**	**1,624**	**1,220**	**1,229**	**1,554**	**1,773**	**1,184**
	%	**100.0**	**18.9**	**14.2**	**14.3**	**18.1**	**20.7**	**13.8**
Female	No.	**8,907**	**1,198**	**1,913**	**1,583**	**1,624**	**1,398**	**1,192**
	%	**100.0**	**13.5**	**21.5**	**17.8**	**18.2**	**15.7**	**13.4**
15-19:								
Male	No.	1,187	95	95	118	197	546	136
	%	100.0	8.0	8.0	10.0	16.6	46.0	11.5
Female	No.	1,146	88	181	176	249	361	90
	%	100.0	7.7	15.8	15.3	21.7	31.6	7.9
20-24:								
Male	No.	1,106	177	153	170	202	301	101
	%	100.0	16.0	13.9	15.4	18.3	27.3	9.2
Female	No.	1,108	158	269	208	207	174	93
	%	100.0	14.3	24.2	18.7	18.6	15.7	8.4
25-44:								
Male	No.	3,230	581	522	521	666	586	353
	%	100.0	18.0	16.2	16.1	20.6	18.1	10.9
Female	No.	3,242	307	740	694	685	500	317
	%	100.0	9.5	22.8	21.4	21.1	15.4	9.8
45-64:								
Male	No.	2,174	513	324	318	386	245	388
	%	100.0	23.6	14.9	14.6	17.8	11.3	17.8
Female	No.	2,279	319	479	378	373	304	425
	%	100.0	14.0	21.0	16.6	16.4	13.4	18.7
65 and over:								
Male	No.	887	258	125	101	103	94	206
	%	100.0	29.1	14.1	11.4	11.6	10.6	23.2
Female	No.	1,132	325	244	128	111	59	267
	%	100.0	28.7	21.5	11.3	9.8	5.2	23.6

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 25.

Emotional health was measured by the Affect Balance Scale as positive, mixed or negative. Table 18, which cross-classifies the Affect Balance Scale and the Physical Activity Index, shows that those exhibiting negative affect scores are significantly more likely to be sedentary (25%) than those with positive (13%). The difference is most pronounced for people 65 years and over; 56% of those with a negative affect scores are sedentary compared to just 23% of those with positive affect scores. Conversely, for the same age group, 12% of those with positive affect balance are very active compared to only 5% with negative indexes are classified as very active. Thus, it would therefore appear that a positive state of emotional well-being is associated with a high level of physical activity, particularly for older people.

Physical Fitness

Physical fitness was measured using a Canadian Home Fitness Test (CHFT)[26] developed by the federal government's Fitness and Amateur Sport directorate. The CHFT is a sub-maximal test of cardio-respiratory efficiency which involves stepping up and down two stairs at a musical tempo appropriate for the person's age and sex.[27] Respondents were classified in three categories based on pulse readings: "recommended level", "minimum acceptable" and "unacceptable". Tables reporting fitness levels also show a "screened out" category. Most of the people screened out probably fall into a "below acceptable" category. An estimate of aerobic capacity - maximum rate of oxygen consumption in litres per minute (VO_2max) per kilogram of body weight - was based on immediate post-exercise pulse rate, using a regression equation involving age, sex and weight.[28]

About one participant in three was screened out of the fitness test, 80% of these as a result of the PAR-Q. The proportion was lowest (17%) in the youngest age group, increasing with age to 58% in the 45-64 year age group. Proportionately more females (36%) than males (30%) were screened out overall, and this was also the case within each age group.

Of the 63% of respondents who passed the screening, 40% had the recommended level of fitness, 22% were assigned the minimum acceptable level, and 1% were judged to have fitness below the acceptable level (Table 19). Recently released preliminary data for 1981 revealed that "overall, a majority of the population reached a recommended level of cardiovascular fitness on the Canadian Home Fitness Test".[29]

The youngest group of males had the greatest proportion (55%) achieving the recommended level. The lowest proportion was for females aged 45-64; next lowest were males of the same age.

Fitness levels are compared to levels of physical activity in Table 20. The proportion screened out of the Canadian Home Fitness Test decreases progressively with increasing levels of physical activity, from 47% of those classified as sedentary to 25% of those classified as very active. Conversely, the proportion of the population having a recommended level of fitness increases progressively with increasing levels of physical activity, from 27% of sedentary persons to 51% of the very active. The values of VO_2 max. are almost the same from sedentary through moderately active, and slightly higher for the very active group. These patterns hold for both males and females and for all age groups (Table 21).

Conclusion

Fitness and activity levels are lower for women and decline with age. Thus programs to promote fitness should take this into account, particularly in terms of encouraging the concept of a lifetime of physical activity.

Nearly equal proportions of men and women aged 15-64 have recommended levels of fitness as measured by the Canadian Home Fitness Test (40%) and recommended levels of physical activity (moderately active and very active) as measured by the Physical Activity Index (39%). However, only 48% of those with recommended levels of physical activity also have the recommended level of physical fitness. While physical activity is clearly related to physical fitness, there are other relevant factors including diet and heredity which need to be studied further.

Drug Use[30]

Drugs may have a positive or negative impact on health, and in some cases, may even have mixed results. They can be used to cure illness or control symptoms of disease, allowing an individual to lead a better life. They can also be a form of preventive health care, as in taking vitamins. Health hazards are posed when drugs are used illegally, taken in certain combinations or mixed with alcohol. Drugs such as birth control pills, while useful, may have side-effects or associated health risks. For the purposes of this report, drug use is considered as one of the determinants of health status.

Information on the use of medicines, pills or ointments within two days prior to questioning was collected in the interview component of the Canada Health Survey. Use of the word "drug" here refers broadly to all these drugs, whether they be prescription or not, including vitamins or minerals. Overall, the survey indicated that 48% of the population took drugs during the two days and 60% of those taking drugs, reported taking at least one drug on the doctor's advice.

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[26] *The Fit Kit.* Ottawa: **Fitness and Amateur Sport,** 1976.

[27] Respondents are first screened using the Physical Activity Readiness Questionnaire (PAR-Q) to determine suitability for undertaking CHFT. *PAR-Q Validation Report.* The Evaluation of a Self-administered Pre-exercise Screening Questionnaire for Adults. Victoria, British Columbia Ministry of Health, May, 1978.

[28] **Jetté** *et al.* The Canadian Home Fitness Test as a Predictor of Aerobic Capacity, *C.M.A. Journal,* 1976, Vol. 114, pp. 680-682.

[29] Canada Fitness Survey, *Canada's Fitness: Preliminary Findings of the 1981 Survey,* **Fitness and Amateur Sport**, Ottawa, June 1982, p. 10.

[30] *The Health of Canadians: Report of the Canada Health Survey, op. cit.*

TABLE 18. Population 15 Years and Over by Level of Physical Activity, by Age and "Affect Balance Scale" Scores, Canada, 1978-1979

Affect balance scale scores		Level of physical activity						
		Total	Sedentary	Moderately inactive	Moderate	Moderately active	Very active	Unknown
		in thousands						
Age 15 and over:								
Total	No.	**17,492**	**2,822**	**3,133**	**2,812**	**3,178**	**3,172**	**2,376**
	%	**100.0**	**16.1**	**17.9**	**16.1**	**18.2**	**18.1**	**13.6**
Positive	No.	**7,956**	**1,043**	**1,434**	**1,368**	**1,619**	**1,658**	**834**
	%	**100.0**	**13.1**	**18.0**	**17.2**	**20.3**	**20.8**	**10.5**
Mixed	No.	**7,081**	**1,240**	**1,321**	**1,167**	**1,257**	**1,271**	**825**
	%	**100.0**	**17.5**	**18.7**	**16.5**	**17.8**	**17.9**	**11.6**
Negative	No.	**770**	**190**	**153**	**108**	**106**	**129**	**84**
	%	**100.0**	**24.7**	**19.8**	**14.0**	**13.7**	**16.8**	**11.0**
Unknown	No.	**1,686**	**350**	**226**	**168**	**197**	**114**	**632**
	%	**100.0**	**20.7**	**13.4**	**10.0**	**11.7**	**6.7**	**37.5**
15-19:								
Total	No.	2,333	184	277	294	445	907	226
	%	100.0	7.9	11.9	12.6	19.1	38.9	9.7
Positive	No.	951	65	97	109	191	408	81
	%	100.0	6.8	10.2	11.4	20.1	42.9	8.6
Mixed	No.	1,156	99	150	147	213	451	96
	%	100.0	8.6	13.0	12.7	18.4	39.1	8.3
Negative	No.	123	13	19	30	23	30	--
	%	100.0	10.9	15.6	24.1	18.8	24.5	--
Unknown	No.	103	--	--	--	19	17	41
	%	100.0	--	--	--	18.1	16.9	40.1
20-24:								
Total	No.	2,215	336	422	378	409	476	194
	%	100.0	15.2	19.1	17.1	18.5	21.5	8.8
Positive	No.	1,028	119	188	184	196	259	82
	%	100.0	11.6	18.3	17.9	19.1	25.2	8.0
Mixed	No.	1,006	186	192	172	185	181	89
	%	100.0	18.5	19.1	17.1	18.4	18.0	8.9
Negative	No.	92	--	26	15	12	18	--
	%	100.0	--	27.9	15.8	13.0	19.8	--
Unknown	No.	90	14	--	--	--	--	18
	%	100.0	15.6	--	--	--	--	19.9
25-44:								
Total	No.	6,472	888	1,262	1,215	1,351	1,086	670
	%	100.0	13.7	19.5	18.8	20.9	16.8	10.4
Positive	No.	3,087	320	602	593	744	593	235
	%	100.0	10.4	19.5	19.2	24.1	19.2	7.6
Mixed	No.	2,753	445	566	543	515	411	271
	%	100.0	16.2	20.6	19.7	18.7	14.9	9.9
Negative	No.	267	56	41	36	36	52	46
	%	100.0	20.9	15.5	13.5	13.5	19.4	17.2
Unknown	No.	365	66	52	43	56	29	118
	%	100.0	18.2	14.3	11.8	15.3	8.0	32.4
45-64:								
Total	No.	4,453	832	803	696	759	550	813
	%	100.0	18.7	18.0	15.6	17.0	12.3	18.3
Positive	No.	2,076	356	384	359	380	303	294
	%	100.0	17.1	18.5	17.3	18.3	14.6	14.1
Mixed	No.	1,562	317	285	236	282	190	252
	%	100.0	20.3	18.3	15.1	18.1	12.2	16.1
Negative	No.	180	44	47	21	24	24	20
	%	100.0	24.3	26.3	11.9	13.2	13.2	11.1
Unknown	No.	634	116	86	79	72	33	248
	%	100.0	18.3	13.6	12.5	11.4	5.2	39.0
65 and over:								
Total	No.	2,019	583	369	229	213	153	473
	%	100.0	28.9	18.3	11.3	10.6	7.6	23.4
Positive	No.	813	183	163	123	107	95	143
	%	100.0	22.5	20.0	15.1	13.2	11.7	17.6
Mixed	No.	604	192	127	69	62	37	117
	%	100.0	31.8	21.0	11.4	10.2	6.2	19.3
Negative	No.	108	61	19	6	11	5	6
	%	100.0	56.1	17.7	5.6	10.1	4.9	5.7
Unknown	No.	493	147	60	31	34	15	207
	%	100.0	29.8	12.1	6.2	6.8	3.1	42.0

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 29.

TABLE 19. Population 15-64 Years by Fitness Level and Mean Estimated VO_2 Max., by Sex and Age, Canada, 1978-1979

		Fitness level						
		Total	Mean VO_2 max.	Recommended level	Minimum acceptable	Below acceptable	Screened out	Unknown
		in thousands						
Both sexes:								
All ages	No.	**15,472**	**39.45**	**6,157**	**3,401**	**195**	**5,077**	**643**
	%	**100.0**	- -	**39.8**	**22.0**	**1.3**	**32.8**	**4.2**
15-19	No.	**2,333**	**46.17**	**1,122**	**701**	**19**	**393**	**98**
	%	**100.0**	- -	**48.1**	**30.0**	**0.8**	**16.8**	**4.2**
20-24	No.	**2,215**	**43.69**	**908**	**681**	- -	**489**	**85**
	%	**100.0**	- -	**41.0**	**30.8**	- -	**22.1**	**3.9**
25-44	No.	**6,472**	**38.94**	**2,883**	**1,616**	**96**	**1,603**	**274**
	%	**100.0**	- -	**44.6**	**25.0**	**1.5**	**24.8**	**4.2**
45-64	No.	**4,453**	**29.36**	**1,244**	**403**	- -	**2,591**	**186**
	%	**100.0**	- -	**27.9**	**9.0**	- -	**58.2**	**4.2**
Male:								
All ages	No.	7,697	44.09	3,476	1,543	92	2,288	297
	%	100.0	- -	45.2	20.1	1.2	29.7	3.9
15-19	No.	1,187	51.84	649	322	- -	167	- -
	%	100.0	- -	54.7	27.1	- -	14.0	- -
20-24	No.	1,106	49.09	501	395	- -	157	- -
	%	100.0	- -	45.3	35.7	- -	14.2	- -
25-44	No.	3,230	43.11	1,666	641	- -	729	126
	%	100.0	- -	51.6	19.9	- -	22.6	3.9
45-64	No.	2,174	32.75	660	185	- -	1,236	80
	%	100.0	- -	30.4	8.5	- -	56.8	3.7
Female:								
All ages	No.	7,775	34.33	2,682	1,857	102	2,788	346
	%	100.0	- -	34.5	23.9	1.3	35.9	4.4
15-19	No.	1,146	39.80	473	379	18	226	50
	%	100.0	- -	41.3	33.0	1.6	19.8	4.3
20-24	No.	1,108	36.96	407	287	- -	332	- -
	%	100.0	- -	36.7	25.9	- -	30.0	- -
25-44	No.	3,242	34.48	1,218	974	- -	874	148
	%	100.0	- -	37.6	30.0	- -	27.0	4.6
45-64	No.	2,279	25.80	584	218	- -	1,356	106
	%	100.0	- -	25.6	9.5	- -	59.5	4.7

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 30.

TABLE 20. Population 15-64 Years by Fitness Level and Mean Estimated VO_2 Max., by Sex and Level of Physical Activity, Canada, 1978-1979

Level of physical activity		Fitness level						
		Total	Mean VO_2 max.	Recommended level	Minimum acceptable	Below acceptable	Screened out	Unknown
		in thousands						
Both sexes:								
Total	No.	**15,060**	**39.49**	**6,054**	**3,322**	**188**	**4,897**	**599**
	%	**100.0**	**.262**	**40.2**	**22.1**	**1.2**	**32.5**	**4.0**
Sedentary	No.	**2,038**	**38.96**	**539**	**400**	- -	**950**	**88**
	%	**100.0**	**1.912**	**26.5**	**19.6**	- -	**46.6**	**4.3**
Moderately inactive	No.	**2,678**	**38.05**	**975**	**651**	**36**	**934**	**83**
	%	**100.0**	**1.421**	**36.4**	**24.3**	**1.3**	**34.9**	**3.1**
Moderate	No.	**2,779**	**38.82**	**1,095**	**651**	**36**	**924**	**73**
	%	**100.0**	**1.397**	**39.4**	**23.4**	**1.3**	**33.2**	**2.6**
Moderately active	No.	**3,092**	**39.21**	**1,405**	**748**	- -	**773**	**121**
	%	**100.0**	**1.268**	**45.4**	**24.2**	- -	**25.0**	**3.9**
Very active	No.	**2,821**	**42.30**	**1,434**	**627**	- -	**667**	**93**
	%	**100.0**	**1.499**	**50.8**	**22.2**	- -	**23.6**	**3.3**
Unknown	No.	**1,652**	**38.20**	**606**	**245**	- -	**650**	**142**
	%	**100.0**	**2.313**	**36.7**	**14.8**	- -	**39.4**	**8.6**
Male:								
Total	No.	7,498	44.13	3,405	1,511	88	2,214	278
	%	100.0	.589	45.4	20.2	1.2	29.5	3.7
Sedentary	No.	1,241	42.58	329	238	- -	601	48
	%	100.0	3.431	26.5	19.2	- -	48.4	3.9
Moderately inactive	No.	1,046	43.67	434	265	- -	302	- -
	%	100.0	4.175	41.5	25.3	- -	28.9	- -
Moderate	No.	1,224	43.53	569	250	- -	357	- -
	%	100.0	3.558	46.5	20.4	- -	29.2	- -
Moderately active	No.	1,584	43.88	751	334	- -	403	- -
	%	100.0	2.771	47.4	21.1	- -	25.4	- -
Very active	No.	1,638	46.26	941	345	- -	309	- -
	%	100.0	2.825	57.5	21.0	- -	18.9	- -
Unknown	No.	766	42.58	381	79	- -	242	60
	%	100.0	5.562	49.7	10.4	- -	31.6	7.8
Female:								
Total	No.	7,562	34.38	2,649	1,810	99	2,683	321
	%	100.0	455	35.0	23.9	1.3	35.5	4.2
Sedentary	No.	797	33.72	210	161	- -	349	39
	%	100.0	4.231	26.4	20.2	- -	43.8	4.9
Moderately inactive	No.	1,632	33.87	541	385	- -	632	- -
	%	100.0	2.075	33.1	23.6	- -	38.7	- -
Moderate	No.	1,555	34.57	526	401	- -	566	- -
	%	100.0	2.223	33.8	25.8	- -	36.4	- -
Moderately active	No.	1,508	34.43	654	414	- -	371	52
	%	100.0	2.284	43.4	27.5	- -	24.6	3.5
Very active	No.	1,183	35.72	493	283	- -	357	- -
	%	100.0	3.019	41.6	23.9	- -	30.2	- -
Unknown	No.	886	33.07	225	165	- -	409	82
	%	100.0	3.732	25.4	18.7	- -	46.1	9.3

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 32.

TABLE 21. Population 15-64 Years by Fitness Level and Mean Estimated VO_2 Max., by Physical Activity Index and Age, Canada, 1978-1979

Level of physical activity		Fitness level						
		Total	Mean VO_2 max.	Recommended level	Minimum acceptable	Below acceptable	Screened out	Unknown
		in thousands						
Age 15-64:								
Total	No.	**15,060**	**39.49**	**6,054**	**3,322**	**186**	**4,897**	**599**
	%	**100.0**	- -	**40.2**	**22.1**	**1.2**	**32.5**	**4.0**
Sedentary	No.	**2,038**	**38.96**	**539**	**400**	- -	**950**	**88**
	%	**100.0**	- -	**26.5**	**19.6**	- -	**46.6**	**4.3**
Moderately inactive	No.	**2,678**	**38.05**	**975**	**651**	**36**	**934**	**83**
	%	**100.0**	- -	**36.4**	**24.3**	**1.3**	**34.9**	**3.1**
Moderate	No.	**2,779**	**38.82**	**1,095**	**651**	**36**	**924**	**73**
	%	**100.0**	- -	**39.4**	**23.4**	**1.3**	**33.2**	**2.6**
Moderately active	No.	**3,092**	**39.21**	**1,405**	**748**	- -	**773**	**121**
	%	**100.0**	- -	**45.4**	**24.2**	- -	**25.0**	**3.9**
Very active	No.	**2,821**	**42.30**	**1,434**	**627**	- -	**667**	**93**
	%	**100.0**	- -	**50.8**	**22.2**	- -	**23.6**	**3.3**
Unknown	No.	**1,652**	**38.20**	**606**	**245**	- -	**650**	**142**
	%	**100.0**	- -	**36.7**	**14.8**	- -	**39.4**	**8.6**
15-19:								
Total	No.	2,289	46.15	1,109	690	19	376	95
	%	100.0	2.016	48.4	30.2	0.8	16.4	4.2
Sedentary	No.	181	44.98	75	48	- -	- -	- -
	%	100.0	24.812	41.5	26.2	- -	- -	- -
Moderately inactive	No.	321	44.20	90	142	- -	- -	- -
	%	100.0	13.771	27.9	44.1	- -	- -	- -
Moderate	No.	331	45.06	157	114	- -	- -	- -
	%	100.0	13.604	47.5	34.6	- -	- -	- -
Moderately active	No.	467	45.31	232	154	- -	46	- -
	%	100.0	9.701	49.6	33.1	- -	9.8	- -
Very active	No.	816	47.78	480	197	- -	118	- -
	%	100.0	5.857	58.8	24.1	- -	14.5	- -
Unknown	No.	173	47.24	75	35	- -	52	- -
	%	100.0	27.326	43.6	20.4	- -	30.1	- -
20-24:								
Total	No.	2,175	43.69	904	663	- -	478	79
	%	100.0	2.008	41.6	30.5	- -	22.0	3.6
Sedentary	No.	314	42.41	94	107	- -	78	- -
	%	100.0	13.520	30.1	34.1	- -	24.9	- -
Moderately inactive	No.	391	41.91	171	92	- -	109	- -
	%	100.0	10.720	43.9	23.5	- -	27.9	- -
Moderate	No.	462	42.69	186	155	- -	105	- -
	%	100.0	9.239	40.2	33.5	- -	22.7	- -
Moderately active	No.	416	43.43	156	180	- -	56	- -
	%	100.0	10.439	37.5	43.2	-	13.5	- -
Very active	No.	388	46.79	193	109	- -	58	- -
	%	100.0	12.071	49.7	28.1	- -	14.9	- -
Unknown	No.	205	45.94	- -	- -	- -	72	- -
	%	100.0	22.418	- -	- -	- -	35.2	- -
25-44:								
Total	No.	6,278	38.98	2,814	1,577	- -	1,537	254
	%	100.0	.621	44.8	25.1	- -	24.5	4.0
Sedentary	No.	794	39.13	219	216	- -	279	49
	%	100.0	4.927	27.6	27.2	- -	35.1	6.2
Moderately inactive	No.	1,236	38.65	495	341	- -	336	- -
	%	100.0	3.127	40.0	27.6	- -	27.2	- -
Moderate	No.	1,318	38.09	575	329	- -	370	- -
	%	100.0	2.890	43.7	25.0	- -	28.1	- -
Moderately active	No.	1,369	39.06	754	317	- -	241	- -
	%	100.0	2.852	55.1	23.2	- -	17.6	- -
Very active	No.	1,039	40.15	556	252	- -	211	- -
	%	100.0	3.866	53.5	24.3	- -	20.3	- -
Unknown	No.	522	39.03	215	121	- -	100	81
	%	100.0	7.480	41.2	23.2	- -	19.2	15.4
45-64:								
Total	No.	4,317	29.38	1,227	391	- -	2,506	171
	%	100.0	.681	28.4	9.1	- -	58.1	4.0
Sedentary	No.	749	29.98	150	- -	- -	549	- -
	%	100.0	4.003	20.1	- -	- -	73.3	- -
Moderately inactive	No.	731	28.22	220	76	- -	407	- -
	%	100.0	3.863	30.0	10.4	- -	55.7	- -
Moderate	No.	667	28.48	177	52	- -	415	- -
	%	100.0	4.268	26.5	7.9	- -	62.1	- -
Moderately active	No.	839	29.31	263	96	- -	430	- -
	%	100.0	3.493	31.4	11.5	- -	51.2	- -
Very active	No.	579	30.28	205	69	- -	280	- -
	%	100.0	5.229	35.5	12.0	- -	48.3	- -
Unknown	No.	752	30.21	212	68	- -	426	44
	%	100.0	4.017	28.1	9.0	- -	56.6	5.9

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 33.

TABLE 22. Population by Class of Drug Use, by Age and Sex, Canada, 1978-1979

		Class of drug use											
		Total	Pain reliever	Tranquil-izer	Heart/ blood pressure medicine	Anti-biotic	Stomach medicine	Laxative	Cold remedy	Skin ointment	Vitamins	Other drugs	Any drug use
		in thousands											
All ages:													
Both sexes	No.	**23,023**	**3,138**	**1,096**	**1,564**	**618**	**726**	**592**	**1,450**	**1,293**	**5,167**	**1,800**	**11,021**
	%	**100.0**	**13.6**	**4.8**	**6.8**	**2.7**	**3.2**	**2.6**	**6.3**	**5.6**	**22.4**	**7.8**	**47.9**
Male	No.	**11,417**	**1,180**	**347**	**614**	**265**	**337**	**173**	**670**	**497**	**2,207**	**572**	**4,658**
	%	**100.0**	**10.3**	**3.0**	**5.4**	**2.3**	**2.9**	**1.5**	**5.9**	**4.4**	**19.3**	**5.0**	**40.8**
Female	No.	**11,606**	**1,958**	**749**	**950**	**352**	**389**	**419**	**780**	**796**	**2,960**	**1,229**	**6,363**
	%	**100.0**	**16.9**	**6.5**	**8.2**	**3.0**	**3.4**	**3.6**	**6.7**	**6.9**	**25.5**	**10.6**	**54.8**
Less than 5:													
Male	No.	880	80	--	--	41	--	--	138	72	394	22	511
	%	100.0	9.1	--	--	4.6	--	--	15.6	8.2	44.7	2.5	58.0
Female	No.	838	81	--	-	39	--	--	103	69	383	19	502
	%	100.0	9.6	--	-	4.7	--	--	12.3	8.2	45.7	2.3	59.9
5-9:													
Male	No.	914	66	--	--	26	--	--	115	39	257	20	398
	%	100.0	7.2	--	--	2.8	--	--	12.6	4.2	28.1	2.2	43.5
Female	No.	868	54	--	-	26	--	--	101	38	227	15	349
	%	100.0	6.2	--	-	3.0	--	--	11.6	4.3	26.1	1.7	40.2
10-14:													
Male	No.	1,038	66	--	--	17	--	--	65	37	218	27	348
	%	100.0	6.4	--	--	1.7	--	--	6.3	3.6	21.0	2.6	33.6
Female	No.	992	92	--	--	18	--	--	81	59	213	23	370
	%	100.0	9.2	--	--	1.8	--	--	8.1	5.9	21.5	2.4	37.3
15-19:													
Male	No.	1,187	76	--	--	31	--	--	48	84	161	29	340
	%	100.0	6.4	--	--	2.6	--	--	4.0	7.1	13.6	2.5	28.6
Female	No.	1,146	127	--	--	35	13	--	55	102	228	47	450
	%	100.0	11.1	--	--	3.0	1.1	--	4.8	8.9	19.9	4.1	39.3
20-24:													
Male	No.	1,106	94	--	--	23	24	--	42	43	158	30	317
	%	100.0	8.5	--	--	2.1	2.1	--	3.8	3.9	14.3	2.7	28.6
Female	No.	1,108	162	25	--	39	27	16	66	97	292	106	558
	%	100.0	14.6	2.3	--	3.5	2.5	1.4	6.0	8.8	26.3	9.6	50.3
25-44:													
Male	No.	3,230	362	77	45	56	129	25	143	116	458	84	1,099
	%	100.0	11.2	2.4	1.4	1.7	4.0	8	4.4	3.6	14.2	2.6	34.0
Female	No.	3,242	640	168	56	111	115	92	183	217	814	317	1,733
	%	100.0	19.8	5.2	1.7	3.4	3.6	2.8	5.6	6.7	25.1	9.8	53.5
45-64:													
Male	No.	2,174	293	143	307	56	95	37	81	65	395	194	1,057
	%	100.0	13.5	6.6	14.1	2.6	4.4	1.7	3.7	3.0	18.2	8.9	48.6
Female	No.	2,279	524	311	426	60	139	151	122	148	536	437	1,528
	%	100.0	23.0	13.7	18.7	2.6	6.1	6.6	5.3	6.5	23.5	19.2	67.1
65 and over:													
Male	No.	887	143	92	258	16	63	83	38	42	166	165	589
	%	100.0	16.1	10.4	29.1	1.8	7.1	9.3	4.3	4.7	18.8	18.6	66.4
Female	No.	1,132	279	223	463	25	81	140	69	66	266	263	872
	%	100.0	24.6	19.7	40.9	2.2	7.1	12.3	6.1	5.9	23.5	23.2	77.0

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 95.

TABLE 23. Population by Variety of Drugs Taken, by Age and Sex, Canada, 1978-1979

		Total	No drug variety	One drug variety	Two drug variety	Three drug variety or more
		in thousands				
All ages:						
Both sexes	No.	**23,023**	**12,002**	**6,740**	**2,769**	**1,512**
	%	**100.0**	**52.1**	**29.3**	**12.0**	**6.6**
Male	No.	**11,417**	**6,759**	**3,081**	**1,100**	**476**
	%	**100.0**	**59.2**	**27.0**	**9.6**	**4.2**
Female	No.	**11,606**	**5,243**	**3,659**	**1,669**	**1,035**
	%	**100.0**	**45.2**	**31.5**	**14.4**	**8.9**
Less than 5:						
Male	No.	880	370	314	147	49
	%	100.0	42.0	35.7	16.7	5.6
Female	No.	838	336	350	110	42
	%	100.0	40.1	41.7	13.2	5.0
5-9:						
Male	No.	914	516	295	70	33
	%	100.0	56.5	32.3	7.6	3.6
Female	No.	868	519	256	71	22
	%	100.0	59.8	29.4	8.2	2.5
10-14:						
Male	No.	1,038	690	272	58	19
	%	100.0	66.4	26.2	5.6	1.8
Female	No.	992	622	275	71	24
	%	100.0	62.7	27.7	7.2	2.5
15-19:						
Male	No.	1,187	848	257	60	23
	%	100.0	71.4	21.7	5.0	1.9
Female	No.	1,146	696	305	117	28
	%	100.0	60.7	26.6	10.2	2.4
20-24:						
Male	No.	1,106	790	231	62	23
	%	100.0	71.4	20.9	5.6	2.1
Female	No.	1,108	551	350	153	55
	%	100.0	49.7	31.6	13.8	4.9
25-44:						
Male	No.	3,230	2,131	788	241	70
	%	100.0	66.0	24.4	7.5	2.2
Female	No.	3,242	1,509	1,038	465	230
	%	100.0	46.5	32.0	14.3	7.1
45-64:						
Male	No.	2,174	1,117	640	274	143
	%	100.0	51.4	29.5	12.6	6.6
Female	No.	2,279	751	751	426	352
	%	100.0	32.9	32.9	18.7	15.4
65 and over:						
Male	No.	887	298	284	188	117
	%	100.0	33.6	32.0	21.2	13.1
Female	No.	1,132	260	335	255	283
	%	100.0	23.0	29.6	22.5	25.0

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 96.

TABLE 24. Population 15 Years and Over by "Negative Affect Scale" Scores, by use of Tranquilizers or Sleeping Pills by Sex, Canada, 1978-1979

		Total	Highly negative	Moderate	Low	Unknown
		in thousands				
Tranquilizers or Sleeping Pills Used:						
Total	No.	**1,035**	**100**	**575**	**225**	**134**
	%	**100.0**	**9.7**	**55.6**	**21.8**	**12.9**
Male	No.	322	26	180	77	39
	%	100.0	8.0	56.0	23.9	12.1
Female	No.	713	75	395	148	95
	%	100.0	10.5	55.4	20.8	13.3
No Tranquilizers or Sleeping Pills Used:						
Total	No.	**16,457**	**328**	**8,517**	**6,209**	**1,402**
	%	**100.0**	**2.0**	**51.8**	**37.7**	**8.5**
Male	No.	8,262	113	4,175	3,266	708
	%	100.0	1.4	50.5	39.5	8.6
Female	No.	8,195	215	4,343	2,943	694
	%	100.0	2.6	53.0	35.9	8.5

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.* Table 98.

Use of drugs varies significantly by sex as can be seen in Table 22. A greater proportion of females (55%) use drugs of all types than do males (41%). For tranquilizers, sleeping pills, laxatives and "other" drugs, the rates of use by females are more than double that of males. Drugs listed in the "other" category in the table are most commonly birth control pills, female hormones and drugs for diabetes or thyroid conditions.

The pattern of drug use by age is similar to other health-related variables. The proportion taking drugs is high in the very young (59% of the 0-4 years age group), lower for young adults (34% of the 15-19 years age group) and increases steadily with age (72% of those 65 and over).

Although rather high proportions of the population report drug use, not all is related to a particular health problem. In fact, more than one-quarter of the people reporting drug use indicate no associated health problems (see Table 64). Of greater concern is the proportion of the population reporting multiple drugtaking (see Table 23). The proportion of females (9%) taking three or more types of drugs is significantly higher than males (4%) and the difference increases markedly with age. For the age group 65 years and over, 25% of females and 13% of males reported taking three or more kinds of drugs simultaneously. When several different types of drugs are taken at the same time, they may cause a drug interaction resulting in ineffective therapy or more serious and even dangerous consequences. These effects are of particular concern for the elderly because of their propensity for drug taking.[31]

Some interesting observations can be made by examining the relationship between tranquilizer or sleeping pill use and emotional well-being (Table 24). One measure of emotional health is the Negative Affect Scale where higher scores indicates greater unhappiness; 23% of those with highly negative scores indicate taking tranquilizers. Of those with low negative affect scores, only 4% use tranquilizers.

A significantly larger proportion of women than men report taking tranquilizers, regardless of negative affect scores. In addition, a greater proportion of females score highly negative on the negative affect scale regardless of tranquilizer use. One final observation from Table 24 is that the unknown category, reflecting those who skipped these questions, is higher for those taking tranquilizers. It is a reasonable assumption that those who were emotionally unhappy found the negative questions uncomfortable and therefore skipped them. If this were the case, then the visible relationship between tranquilizer or sleeping pill use and negative affect scores would be even stronger.

The data presented here indicate that many Canadians resort frequently to drugs for both preventive and curative purposes. Women and the elderly ar more likely to take more than one kind of drug at a time. Finally, for certain types of drugs, specifically, tranquilizers or sleeping pills and laxatives, the rate of use by women is over double that of men.

Accidents and Violence

The studies on accidents deal primarily with the numbers and characteristics of persons who have died in accidents, rather than those who have been rendered ill or disabled. This is essentially due to the greater availability and reliability of mortality statistics.

The sequence of events leading up to the death of a person can stem from an illness, a trauma or intoxication. In the first instance, death is referred to as "natural", whereas in the others, it is accidental.[32]

[31] **Peterson, D.** *et al.* "Drug use and misuse among the elderly", *Journal of Drug Issues*, 1979, Vol. 9, pp. 5-26.

[32] **Péron, Yves,** "Analyse de l'effet de la mortalité accidentelle et violente sur l'espérance de vie, Canada, régions ou provinces, 1931-1971", Economic Council of Canada (Paper No. 16), November 1974, p. 4.

These accidental deaths[33] are the result of a sudden and brutal external intervention,[34] with "sudden" referring to the generally short lapse of time between the cause and the death. Three types of deaths are classified as accidental: homicides, suicides and deaths through accident.

Importance of Accidents and Violent Deaths

Accidents rank third among causes of death in Canada, for both sexes, after diseases of the circulatory system and tumors. Comparison of the gains in life expectancy (at birth) that would result from the elimination of one of these causes of death indicates the importance of accidents relative to other causes of death:[35]

	Males	Females
Major cardiovascular-renal diseases	6.2 years	4.6 years
Neoplasms	2.6 years	2.8 years
Accidents	2.3 years	1.0 year

While the number of deaths due to accidents is small in comparison with the two other causes, since they occur at relatively early ages, they have a rather significant impact on life expectancy.

The Potential Years of Life Lost (PYLL)[36] method is another way of quantifying the significance of premature deaths due to a given cause. It reveals (Table 25) that close to 40% of all years lost between the 1st and 70th birthdays are lost because of accidents and violent acts, the latter cause being more prevalent among males (about 4/10 of the PYLL) than among females (close to 3/10 of the PYLL). Moreover, 40% of these years are lost as a result of traffic accidents.

Calculations for 1970-1972[37] showed that a Canadian male has one chance in ten, a Canadian female one chance in 20, of dying of accidental or violent causes between birth and the 85th birthday. The corresponding risks for traffic accidents are 1/24 and 1/60 respectively. Moreover, these risks are unevenly divided between males and females: whereas a male is about 1.5 times as likely as a female to die before the age of 85, this risk ratio is 2.0 in the case of all accidents and 2.5 in the case of traffic accidents.

Traffic Accidents[38]

Traffic accidents warrant special consideration due to the large number of deaths and injuries (46% of the accidental deaths in 1978) attributed to them and the youthfulness of the victims.

TABLE 25. Distribution of Potential Years of Life Lost between 1 and 70 years, by Sex and Type of Accident, Canada, 1978

Cause of death	Code[1]	Males	Females	Total
		%		
Accidents	AE 138-146	29.9	20.0	26.7
Motor vehicles	AE 138	16.7	12.1	15.2
Other	AE 139-146	13.2	7.9	11.5
Other violent deaths	AE 147-150	13.2	9.1	11.8
Suicides	AE 147	9.5	5.7	8.3
Other	AE 148-150	3.7	3.3	3.6
All accidents and violence	AE 138-150	43.0	29.1	38.5
All causes of death %		**100.0**	**100.0**	**100.0**
All causes of death No.		**852,080**	**401,577**	**1,254,385**

[1] According to the International Classification of Diseases, 8th Revision.
Source: Statistics Canada, *Vital Statistics*, Vol. III, Mortality, Catalogue 84-206, June 1980, Table 4. pp. 16-35.

[33] I.e., those include in codes E800 to E899 of the 8th revision of the International Classification of Diseases, adapted (ICDA).

[34] For a discussion of the concept of accidental death, see **Chesnais, J.-C.,** *Les morts violentes en France depuis 1826. Comparaisons internationales.* (INED, Cahier de "Travaux et documents", no. 75), Paris, PUF, pp. 1-3.

[35] These calculations pertained to the 1975-1977 period. Causes were grouped according to the following detailed categories of the ICDA (8th revision): major cardiovascular-renal diseases (390-458 and 580-584), neoplasms (140-239) and accidents (E800-999).

[36] According to this method, any death occurring before the age of 70 is considered premature. It consists of summing all the differences between age 70 and the age at death by cause. Generally speaking, only deaths occurring between the ages of 1 and 70 are considered: the nature of the causes of infant mortality and their weight in the calculation led to their exclusion. Any years lived beyond the age of 70 (basically a person's life expectancy at birth or even at age 1) could be considered as years "gained". For details see **Romeder, J.-M. and McWhinnie, J.R.,** *The Development of Potential Years of Life as an Indicator of Premature Mortality*, Staff Paper No. 77-2, Long Range Health Planning Branch, Department of Health and Welfare, Ottawa 1977.

[37] In a study by **Strohmenger, C.,** "Tables de mortalité par accidents. Quelques comparaisons entre le Québec et l'Ontario, 1970-72", paper presented at the 45th ACFAS Conference (Demography Section), Université du Québec à Trois-Rivières, May 19-21, 1977.

[38] Code AE138A of the ICDA (8th revision). For a detailed study, see **Laberge-Nadeau, Claire et Bourbeau, Robert,** "Mortalité et morbidité par accidents de la route au Canada, 1960-1974", *Routes et transports May 1979, pp. 14-19, and* **Bourbeau, Robert,** *Les Accidents de la route au Québec depuis 1926: étude démographique et épidémiologique,* Ph.D. thesis, *Département de démographie,* Université de Montréal, June 1981.

Although traffic accident mortality rates declined somewhat after 1973,[39] they have increased since 1960 with continuing disparities by sex, men being 2.6 times more susceptible to such accidents than women (Table 26). Even more significant are the differences by age group. For example, in 1978, 3% of all deaths in Canada were due to traffic accidents; but for those 15 to 24 years of age, traffic accidents were responsible for about 40% of deaths. In addition, 38.1% of all deaths due to traffic accidents occurred in this age group.

As mentioned previously, morbidity is less often discussed in relation to traffic accidents due to the unavailability of reliable data. Moreover, these data lend themselves less readily to comparisons: injuries may vary considerably, from a simple fracture to total paralysis, but the statistics do not allow for such distinctions. It should be noted that for every person killed in a traffic accident in 1975, approximately 36 were injured (Tables 26 and 27). This gives an idea of the seriousness of this type of morbidity, especially since the consequences are often almost as tragic as death.

TABLE 26. Traffic Accident Mortality Rate by Sex, Canada, 1960-1978

Year	Males	Females	Both sexes
	rate per 100,000		
1960	27.1	9.4	18.4
1965	36.1	13.7	24.9
1970	35.0	12.6	23.8
1975	40.7	15.3	26.7
1978	31.5	12.1	21.7

Source: **Statistics Canada**, *Vital Statistics*, Catalogue 84-202 Annual (1960, 1965 and 1970), Catalogue 84-206 Annual (1975, 1978) and population estimates.

TABLE 27. Traffic Accident Morbidity Rate by Sex, Canada, 1960-1975

Year	Males	Females	Both sexes
	rate per 100,000		
1960	–	–	504.6
1965	955.9	572.6	766.8
1970	1017.9	655.7	838.2
1975	1170.0	778.0	973.4

Source: *"Les accidents de la route au Québec depuis 1926: étude démographique et épidémiologique", op. cit.* (Annexe statistique, vol. II).

The traffic accident morbidity rate in Canada almost doubled between 1960 and 1975 (Table 27). Its growth has been more rapid than that of the mortality, while the differences by sex have been less pronounced. Excess morbidity among males was 1.5 in 1975, compared with about 2.6 for excess mortality. The shape of the curve of the morbidity rates by age resembles that of the mortality rates, except beyond the age of 45 where, unlike the mortality rates, the morbidity rates continue to decline. Excess morbidity among males is also highest in the 15-24 age group.

The following gives an idea of the risks involved. Using data on the age-sex distribution of traffic accident victims in Quebec during the 1976-1977 period, **R. Bourbeau**[40] calculated that under the conditions at that time, a man had one chance in two of being injured in a traffic accident between birth and age 65; a women had one chance in three.

As well as the demographic aspects of morbidity and mortality related to accidents, there are the often less spectacular economic and social results. These include indirect economic costs such as loss of productivity as well as direct costs such as hospitalization, insurance and legal fees. Social costs are less obvious and may include loss of enjoyment of life, suffering and effects on other people.

Accidents and Lifestyle

After examining the consequences of accidents, particularly traffic accidents, one is prompted to ask whether such events are inevitable. The instinctive reply is, in many cases, "no". It would seem that, as in the cases of tobacco use and alcoholism, highway traffic accidents are largely attributable to the human factor. The following figures confirm that this is true of Quebec:[41]

Cause of accidents	Percentage of accidents in which factors play a definite or probable role
Human factors (speeding, alcohol, human errors, etc.)	80 to 95
Vehicle-related factors (brakes, tires, etc.)	15 to 30
Environmental factors (road conditions, weather, etc.)	5 to 20

Moreover, a survey has shown that these figures accurately reflect the way people perceive the primary causes of accidents.[42] Thus, the public is well aware of the human factor in traffic accidents. It is therefore not

[39] This could be partially attributed to seatbelt legislation. See **Pierce, J.**, "Safety Benefits of the Seatbelt Legislation and Speed Limit Reduction in Ontario", in *Proceedings of the American Association for Automotive Medicine*, AAAM, Morton Grove, Illinois, pp. 242-253; and the proceedings of the same conference, **Bergan, A., Watson, L.** *et al.*, "The Effect on Injury and Fatality Rates of Seatbelt Usage in Saskatchewan", pp. 412-475. See also **Williams, A. and Robertson, L.**, "Observed Daytime Seatbelt Use in Vancouver Before and After the British Columbia Belt-use Law", *Canadian Journal of Public Health*, Sept.-Oct. 1979, pp. 329-332.

[40] "Les accidents de la route au Québec", *Ma Caisse*, Vol. 17, 1, January-February 1980, pp. 11-22.

[41] *Ministère des Transports du Québec* (1978); cited in "Les accidents de la route au Québec", *op. cit.*, p. 16.

[42] "Les accidents de la route au Québec", *op. cit.*, p. 16.

unreasonable to expect such accident prevention measures as avoiding the abuse of alcohol, reducing speed and wearing seatbelts, to be willingly undertaken.

Although it has been proved that in the vast majority of cases, wearing a seatbelt prevents certain unfortunate consequences of accidents or at least reduces their seriousness, relatively few Canadians wear them. A survey conducted in May 1977 revealed that less than 30% of drivers wear seatbelts and most who do reside in provinces with seatbelt legislation (Table 28). The Canada Health Survey also examined this question in 1978-1979. Table 29, which deals with drivers and passengers, shows that less than half of them always (or almost always) wear their seatbelt and that many who do are compelled by law.

TABLE 28. Seatbelt Use by Drivers, Canada and Provinces, May 1977

Province	Percentage of drivers wearing seatbelts
British Columbia[1]	36.9
Alberta	15.6
Saskatchewan[1]	32.3
Manitoba	7.8
Ontario[1]	51.9
Quebec[1]	39.6
New Brunswick	15.3
Nova Scotia	22.3
Prince Edward Island	7.5
Newfoundland	8.2
CANADA	**29.4**

[1] Law in these four provinces make it obligatory to wear seatbelts.

Source: "A Survey to Determine the Level of Use of Seat Belts by Canadian Automobile Drivers." Report prepared for the Automobile and Highway Safety Branch, Transport Canada, by Canadian Facts Co. Limited, Toronto, Ontario, February 1978 (after observation of some 17,000 drivers throughout the country).

Conclusion

Thus, injuries and deaths of an accidental or violent nature, largely responsible for excess mortality among males, are of particular importance due to their prevalence among the young. The often avoidable nature of events leading up to these injuries or deaths make them prime targets for prevention programs.

Preventive Health Practices[43]

As previously discussed, individuals can promote good health by limiting tobacco and alcohol use and by exercising regularly. There is, however, another category of preventive measures which will be discussed in this section, namely, immunization and specific female health practices.

[43] *Health of Canadians: Report of the Canada Health Survey, op. cit.*

Immune Status

A person exposed to a viral or bacterial infection may or may not develop the corresponding disease. If he does, the case may be mild or severe. Many factors are involved in the development of disease, such as the extent of the exposure. Serum antibody is another determinant. Other defences such as cellular immunity also play a role. High levels of serum antibody indicate protection, generally arising from previous exposure to the disease or to an artificial active immunizing agent. Low levels are associated with susceptibility and usually occur in persons having no previous exposure.

Frequent occurrence of high antibody levels within a particular geographic region may result either from high prevalence of the natural disease or from effective immunization programs. Frequent occurrence of low levels indicates absence of both naturally acquired and artificially induced immunity.

Rubella (german measles) is of interest because of its potential to cause birth defects in infants born to women infected during pregnancy. Table 30 shows that there are 237,000 women aged 20-34 in Canada, in the prime childbearing years who are inadequately protected against rubella. The large number of unprotected females aged 6-14 are also of concern since they are potentially the unprotected expectant mothers of the future.

Poliomyelitis (polio) is an acute viral illness which in its severe form can cause permanent paralysis or death. Its distribution is world-wide. Most infections are mild and transient, and epidemics have been limited to a relatively few areas. In North America, the epidemics of paralytic poliomyelitis which were common in the first half of the century have been reduced to small sporadic outbreaks since the introduction of immunization in the late 1950s.

There are three distinct types of poliovirus, each capable of causing paralytic disease. Protection against one does not confer immunity to the others.

Tables 32 and 33 combine the results for the three types by considering for each respondent the lowest antibody level of the three, as a measure of susceptibility to one or more poliovirus type.

Table 32 illustrates polio antibody levels by age group. The 20-24 year group has the smallest proportion of low antibody levels (23%). However, the two adjacent age groups are not substantially different from the rest of the population. The oldest group, 35-44 years, has the greatest proportion of low antibody levels, with 45% showing a titre of one in 10 or less to at least one type.

The better protection of the 20-24 year age group may represent the first enthusiastic rush to obtain immunization when polio vaccine was introduced in the mid 1950s and early 1960s. Members of this group were either young children at the time, or were born during the first few years afterward. Among those investigated, the least well protected group is the oldest, the people who were early teenagers or older at the time the vaccine was introduced.

TABLE 29. Population 15 Years and Over Who Drove or Rode In a Car In the Previous Two Weeks by Consistency of Seatbelt Use, by Age and Provincial Seatbelt Legislation, Canada, 1978-1979

Seatbelt legislation		Consistency of seatbelt use				
		Total	Always or most of the time	Incon-sistently	Rarely or never	Unknown
		in thousands				
Age 15 and over:						
Total	No.	**15,524**	**7,643**	**476**	**4,610**	**2,795**
	%	**100.0**	**49.2**	**3.1**	**29.7**	**18.0**
Seatbelt use mandatory	No.	**11,855**	**7,134**	**389**	**2,519**	**1,812**
	%	**100.0**	**60.2**	**3.3**	**21.2**	**15.3**
Seatbelt use not mandatory	No.	**3,204**	**509**	**87**	**2,091**	**516**
	%	**100.0**	**15.9**	**2.7**	**65.3**	**16.1**
Unknown	No.	**466**	-	-	-	**466**
	%	**100.0**	-	-	-	**100.0**
15-19:						
Total	No.	2,126	826	64	807	429
	%	100.0	38.9	3.0	37.9	20.2
Seatbelt use mandatory	No.	1,556	766	50	489	250
	%	100.0	49.2	3.2	31.5	16.1
Seatbelt use not mandatory	No.	465	60	14	317	73
	%	100.0	13.0	3.0	68.2	15.8
Unknown	No.	106	-	-	-	106
	%	100.0	-	-	-	100.0
20-24:						
Total	No.	2,014	853	110	790	261
	%	100.0	42.4	5.4	39.2	13.0
Seatbelt use mandatory	No.	1,520	793	92	474	161
	%	100.0	52.2	6.1	31.2	10.6
Seatbelt use not mandatory	No.	451	60	17	317	57
	%	100.0	13.3	3.8	70.1	12.7
Unknown	No.	43	-	-	-	43
	%	100.0	-	-	-	100.0
25-44:						
Total	No.	5,876	3,095	215	1,708	858
	%	100.0	52.7	3.7	29.1	14.6
Seatbelt use mandatory	No.	4,546	2,876	178	912	580
	%	100.0	63.3	3.9	20.1	12.8
Seatbelt use not mandatory	No.	1,211	219	37	796	159
	%	100.0	18.1	3.1	65.8	13.1
Unknown	No.	119	-	-	-	119
	%	100.0	-	-	-	100.0
45-64:						
Total	No.	3,944	2,081	79	948	837
	%	100.0	52.8	2.0	24.0	21.2
Seatbelt use mandatory	No.	3,056	1,952	63	477	564
	%	100.0	63.9	2.1	15.6	18.4
Seatbelt use not mandatory	No.	764	129	15	471	148
	%	100.0	16.9	2.0	61.7	19.4
Unknown	No.	125	-	-	-	125
	%	100.0	-	-	-	100.0
65 and over:						
Total	No.	1,564	787	9	357	410
	%	100.0	50.3	0.6	22.8	26.2
Seatbelt use mandatory	No.	1,177	747	--	167	257
	%	100.0	63.4	--	14.2	21.9
Seatbelt use not mandatory	No.	313	41	--	190	79
	%	100.0	13.0	--	60.7	25.2
Unknown	No.	74	-	-	-	74
	%	100.0	-	-	-	100.0

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 38.

TABLE 30. Males 6-19 Years and Females 6-34 Years by Rubella Antibody Level and Age, Canada, 1978-1979

		Rubella antibody level (reciprocal of titre level)				
		Total	Less than or equal to 8	16-32	Greater than or equal to 64	Unknown
		in thousands				
All age groups	No.	**8,827**	**1,135**	**2,171**	**4,930**	**592**
	%	**100.0**	**12.9**	**24.6**	**55.8**	**6.7**
6-9 (both sexes)	No.	1,445	231	445	627	--
	%	100.0	16.0	30.8	43.4	--
10-14 (both sexes)	No.	2,030	375	633	921	100
	%	100.0	18.5	31.2	45.4	4.9
15-19 (both sexes)	No.	2,333	291	400	1,480	162
	%	100.0	12.5	17.1	63.4	6.9
20-24 (female only)	No.	1,113	121	195	774	--
	%	100.0	10.9	17.5	69.5	--
25-34 (female only)	No.	1,906	116	499	1,128	163
	%	100.0	6.1	26.2	59.2	8.5

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 39.

TABLE 31. Males 6-19 Years and Females 6-34 Years by Rubella Antibody Level, Canada and Regions, 1978-1979

		Rubella antibody level (reciprocal of titre level)				
		Total	Less than or equal to 8	16-32	Greater than or equal to 64	Unknown
		in thousands				
Canada	No.	**8,827**	**1,135**	**2,171**	**4,930**	**592**
	%	**100.0**	**12.9**	**24.6**	**55.8**	**6.7**
Atlantic region	No.	899	109	148	565	77
	%	100.0	12.1	16.5	62.8	8.5
Quebec	No.	2,389	298	636	1,306	150
	%	100.0	12.5	26.6	54.6	6.3
Ontario	No.	3,151	381	828	1,732	210
	%	100.0	12.1	26.3	55.0	6.7
Prairie region	No.	1,480	250	254	845	--
	%	100.0	16.9	17.2	57.1	--
British Columbia	No.	908	97	305	483	--
	%	100.0	10.6	33.6	53.1	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 40.

TABLE 32. Population 6-44 Years by Susceptibility to One or More Polio Types, by Age, Canada, 1978-1979

		Minimum polio antibody level (reciprocal of titre level)				
		Total	Less than or equal to 10	20-40	Greater than or equal to 80	Unknown
		in thousands				
All ages	No.	**14,495**	**4,594**	**5,538**	**3,906**	**457**
	%	**100.0**	**31.7**	**38.2**	**26.9**	**3.2**
6-9	No.	1,445	447	460	335	203
	%	100.0	30.9	31.8	23.2	14.1
10-14	No.	2,030	550	750	605	--
	%	100.0	27.1	37.0	29.8	--
15-19	No.	2,333	676	895	724	--
	%	100.0	29.0	38.4	31.0	--
20-24	No.	2,233	503	1,076	641	--
	%	100.0	22.5	48.2	28.7	--
25-34	No.	3,787	1,209	1,536	977	66
	%	100.0	31.9	40.6	25.8	1.7
35-44	No.	2,666	1,210	821	624	--
	%	100.0	45.4	30.8	23.4	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 47.

TABLE 33. Population 6-44 Years by Susceptibility to One or More Polio Types, Canada and Regions, 1978-1979

		Minimum polio antibody level (reciprocal of titre level)				
		Total	Less than or equal to 10	20-40	Greater than or equal to 80	Unknown
		in thousands				
Canada	No.	**14,495**	**4,594**	**5,538**	**3,906**	**457**
	%	**100.0**	**31.7**	**38.2**	**26.9**	**3.2**
Atlantic region	No.	1,398	364	583	383	--
	%	100.0	26.0	41.7	27.4	--
Quebec	No.	3,974	1,878	1,586	430	--
	%	100.0	47.3	39.9	10.8	--
Ontario	No.	5,209	1,518	1,554	1,920	217
	%	100.0	29.1	29.8	36.9	4.2
Prairie region	No.	2,399	502	1,091	724	--
	%	100.0	20.9	45.5	30.2	--
British Columbia	No.	1,515	332	724	449	--
	%	100.0	21.9	47.8	29.6	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 48.

They may have been less well covered at the time, being past the prime age for "infantile paralysis", and their immunization levels have not caught up since. Those younger than 20 are also less well protected, possibly because decreased public awareness and concern as the polio epidemics faded into history. The proportion unprotected is quite similar through the age range 6-19 years. This may indicate that the proportion being immunized did not change greatly between 1959 and the mid 1970s.

Quebec stands out as the region having the greatest proportion of its population susceptible to polio with 47% having inadequate protection. Whether this arises because of some factor which reduces the population's exposure to the wild viruses, or because of less effective coverage by immunization programs, is unclear. It is clear that low polio immunity is approximately twice as prevalent in Quebec as in the rest of the country, and that nearly half of Quebec residents are susceptible to one or more poliovirus types.

Diphtheria is an acute infection caused by the bacillus *Corynebacterium diphtheriae*. It usually localizes in the upper respiratory tract, and may cause obstruction of the airway. A toxin produced by the bacteria may cause cardiac and peripheral nerve effects. The overall death rate is about 10%. Immunization is highly effective prophylaxis. Since diphtheria is not a common disease, most of the observed immunity is attributable to routine immunization during infancy. Regional differences are presumed to be largely due to differing immunization programs.

Diphtheria immunity was measured for the age groups 3-5 years and 15-19 years. Table 34 shows that the older group is better protected against this disease than the younger group. The highest immunity level was recorded in the Prairies (Table 35).

Tetanus is an acute disease, frequently fatal, caused by the bacillus (*Clostridium tetani*. The bacterium is present everywhere, so observed regional differences may be attributed to differences in immunization programs.

Tetanus immunity is generally high, as demonstrated in Tables 36 and 37. In the 6-19 year age group, the proportion adequately protected ranges from 88% to 94% with most of the remainder falling in the "unknown" category. Protection varies with geographic region. Quebec has the lowest proportion protected (81%), with the Atlantic region next (86%). In the three other regions of Canada, there is sufficient immunity for at least 93% of the population.

Measles and mumps are common viral diseases. Most cases resolve completely, but in a small proportion there may be a variety of significant complications. The higher antibody levels observed with increasing age are to be expected on the basis of increasing probability of encountering the diseases or of having immunization carried out. The estimated 45% of the population with an antibody level for measles of less than one in eight may be due to an insensitive test, to a decrease in measles antibody after immunization, or to a failure of the vaccine delivery system.

Measles antibody levels are shown in Tables 38 and 39 for age groups 3-5 and 15-19 years. The younger group has a greater proportion of antibody levels, less than one in eight. Circumstances are similar across the five regions, with 38%-45% having levels below one in eight, except in the Prairies, where the proportion is 56%.

Antibody levels to mumps were measured for ages 6-14 years. The proportion having levels of less than one in eight was slightly higher for the 6-9 year group than the 10-14 year group (Table 40). The proportion of lower levels ranges from 47% in Quebec to 64% in British Columbia (Table 41).

In summary, these findings confirm some of the fears of epidemiologists and public health officials regarding the immune status of the population. Since all of the communicable diseases investigated here can be effectively avoided with immunization and since immune status is demonstrably insufficient for some groups, the current effort to raise immunity levels needs to be continued and become more focussed.

TABLE 34. Population 3-5 Years and 15-19 Years by Diphtheria Immunity Level and Age, Canada, 1978-1979

		Diphtheria immunity level			
		Total	Less than .01 units/ML (insufficient)	Greather than or equal to .01 units/ML (sufficient)	Unknown
		in thousands			
Both age groups	No.	**3,328**	**610**	**2,365**	--
	%	**100.0**	**18.3**	**71.1**	--
3-5	No.	995	273	445	--
	%	100.0	27.4	44.7	--
15-19	No.	2,333	337	1,920	76
	%	100.0	14.5	82.3	3.2

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 49.

TABLE 35. Population 3-5 Years and 15-19 Years by Diphtheria Immunity Level, Canada and Regions, 1978-1979

		Diphtheria immunity level			
		Total	Less than .01 units/ML (insufficient)	Greater than or equal to .01 units/ML (sufficient)	Unknown
		in thousands			
Canada	No.	**3,328**	**610**	**2,365**	--
	%	**100.0**	**18.3**	**71.1**	--
Atlantic region	No.	349	64	228	56
	%	100.0	18.4	65.4	16.2
Quebec	No.	904	241	590	--
	%	100.0	26.6	65.3	--
Ontario	No.	1,183	--	829	--
	%	100.0	--	70.1	--
Prairie region	No.	552	--	476	50
	%	100.0	--	86.2	9.1
British Columbia	No.	340	--	241	--
	%	100.0	--	71.0	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 50.

TABLE 36. Population 6-19 Years by Tetanus Immunity Level and Age, Canada, 1978-1979

		Tetanus immunity level			
		Total	Less than .01 units/ML (insufficient)	Greater than or equal to .01 units/ML (sufficient)	Unknown
		in thousands			
All ages	No.	**5,808**	**180**	**5,223**	**405**
	%	**100.0**	**3.1**	**89.9**	**7.0**
6-9	No.	1,445	--	1,276	--
	%	100.0	--	88.3	--
10-14	No.	2,030	--	1,914	--
	%	100.0	--	94.3	--
15-19	No.	2,333	120	2,032	181
	%	100.0	5.1	87.1	7.7

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 51.

TABLE 37. Population 6-19 Years by Tetanus Immunity Level, Canada and Regions, 1978-1979

		Tetanus immunity level			
		Total	Less than .01 units/ML (insufficient)	Greater than or equal to .01 units/ML (sufficient)	Unknown
		in thousands			
Canada	No.	**5,808**	**180**	**5,223**	**405**
	%	**100.0**	**3.1**	**89.9**	**7.0**
Atlantic region	No.	620	--	530	--
	%	100.0	--	85.5	--
Quebec	No.	1,548	136	1,256	156
	%	100.0	8.8	81.2	10.1
Ontario	No.	2,068	--	1,972	--
	%	100.0	--	95.4	--
Prairie region	No.	981	--	913	--
	%	100.0	--	93.1	--
British Columbia	No.	591	--	551	--
	%	100.0	--	93.3	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 52.

TABLE 38. Population 3-5 Years and 15-19 Years by Measles Antibody Level and Age, Canada, 1978-1979

		Measles antibody level (reciprocal of titre level)				
		Total	Less than 8	8-16	Greater than or equal to 32	Unknown
		in thousands				
Both age groups	No.	**3,328**	**1,496**	**1,272**	**442**	**119**
	%	**100.0**	**45.0**	**38.2**	**13.3**	**3.6**
3-5	No.	995	566	342	--	--
	%	100.0	56.9	34.4	--	--
15-19	No.	2,333	930	930	399	74
	%	100.0	39.9	39.9	17.1	3.2

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 53.

TABLE 39. Population 3-5 Years and 15-19 Years by Measles Antibody Level, Canada and Regions, 1978-1979

		Measles antibody level (reciprocal of titre level)				
		Total	Less than 8	8-16	Greater than or equal to 32	Unknown
		in thousands				
Canada	No.	**3,328**	**1,496**	**1,272**	**442**	**119**
	%	**100.0**	**45.0**	**38.2**	**13.3**	**3.6**
Atlantic region	No.	349	147	134	--	35
	%	100.0	42.1	38.4	--	9.9
Quebec	No.	904	376	379	112	36
	%	100.0	41.6	41.9	12.4	4.0
Ontario	No.	1,183	535	499	134	--
	%	100.0	45.2	42.2	11.3	--
Prairie region	No.	552	309	134	85	--
	%	100.0	56.0	24.3	15.4	--
British Columbia	No.	340	128	126	--	--
	%	100.0	37.8	37.0	--	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 54.

TABLE 40. Population 6-14 Years by Mumps Antibody Level and Age, Canada, 1978-1979

		Mumps antibody level (reciprocal of titre level)				
		Total	Less than 8 mumps antibody	8 mumps antibody	Greater than or equal to 16	Unknown
		in thousands				
Both age groups	No.	**3,475**	**1,811**	**929**	**411**	**324**
	%	**100.0**	**52.1**	**26.7**	**11.8**	**9.3**
6-9	No.	1,445	801	373	147	125
	%	100.0	55.4	25.8	10.2	8.6
10-14	No.	2,030	1,011	556	264	199
	%	100.0	49.8	27.4	13.0	9.8

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 55.

TABLE 41. Population 6-14 Years by Mumps Antibody Level, Canada and Regions, 1978-1979

		Mumps antibody level (reciprocal of titre level)				
		Total	Less than 8 mumps antibody	8 mumps antibody	Greater than or equal to 16	Unknown
		in thousands				
Canada	No.	**3,475**	**1,811**	**929**	**411**	**324**
	%	**100.0**	**52.1**	**26.7**	**11.8**	**9.3**
Atlantic region	No.	383	204	86	40	--
	%	100.0	53.2	22.5	10.5	--
Quebec	No.	903	423	--	186	--
	%	100.0	46.8	--	20.6	--
Ontario	No.	1,245	611	361	--	--
	%	100.0	49.1	29.0	--	--
Prairie region	No.	591	347	171	--	33
	%	100.0	58.7	28.9	--	5.6
British Columbia	No.	353	227	--	--	--
	%	100.0	64.3	--	--	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 56.

Female Health Practices

The frequency of female health practices, the Pap smear test and breast self-examination, are shown in Tables 42 and 43. This information was collected in the self-completed questionnaire of the Canada Health Survey.

The proportion of females aged 15 years and over reporting a Pap smear test during the past year is 42%, while 21% have never had one (Table 42). Almost half of those who have never had a test are aged 15-19 and presumably at lower risk. Women with higher educational levels are more likely to have had a test within the past year, but it should be noted that a majority of all women aged 15 and over have only secondary school education or less. In spite of the findings of a task force on cervical cancer screening programs which stressed the importance of tests for older women,[44] the proportion having an annual test decreases markedly after age 25.

A clear relationship also exists between level of education and frequency of examination (Table 43). While 60% of females aged 15 years and over reported conducting breast self-examinations, only 21% did so on a monthly basis. For women with degrees or diplomas, the corresponding proportions were 76% and 25%. For those with secondary school or less, 41% reported that they either never conducted an examination or did not know how. Almost one third of this group were in the 15-19 age group. Of greater concern is that almost half (49%) of women 65 years and over with secondary school education or less did not conduct breast self-examinations. Even though the greatest number of deaths from breast cancer occur in middle age (it is the leading cause of death for females from age 35 through 54), the risk of breast cancer continues to increase with advancing age.

[44] "Cervical cancer screening programs: The Walton Report", **Canadian Medical Association Journal,** 1976, Vol. 114.

TABLE 42. Female Population by Time Since Last Pap Smear Test, by Age and Education, Canada, 1978-1979

Education		Total	Less than one year	1-2 years	More than two years	Never	Unknown
		in thousands					
Age 15 and over:							
Total	No.	**8,907**	**3,701**	**1,559**	**1,305**	**1,826**	**516**
	%	**100.0**	**41.6**	**17.5**	**14.7**	**20.5**	**5.8**
Secondary or less	No.	**6,666**	**2,512**	**1,168**	**1,028**	**1,493**	**465**
	%	**100.0**	**37.7**	**17.5**	**15.4**	**22.4**	**7.0**
Some post-secondary	No.	**697**	**333**	**113**	**61**	**157**	**33**
	%	**100.0**	**47.7**	**16.2**	**8.8**	**22.6**	**4.8**
Degree or diploma	No.	**1,498**	**839**	**272**	**205**	**165**	**16**
	%	**100.0**	**56.0**	**18.2**	**13.7**	**11.1**	**1.0**
Unknown	No.	**47**	**17**	--	**11**	--	--
	%	**100.0**	**37.4**	--	**24.3**	--	--
15-19:							
Total	No.	1,146	221	50	21	767	87
	%	100.0	19.3	4.4	1.8	67.0	7.6
Secondary or less	No.	1,009	189	42	21	677	82
	%	100.0	18.7	4.1	2.0	67.0	8.1
Some post-secondary	No.	117	28	--	-	76	--
	%	100.0	23.8	--	-	65.1	--
Degree or diploma	No.	11	--	-	-	--	-
	%	100.0	--	-	-	--	-
Unknown	No.	--	--	--	-	--	-
	%	--	--	--	-	--	-
20-24:							
Total	No.	1,108	692	152	36	193	35
	%	100.0	62.4	13.7	3.3	17.4	3.2
Secondary or less	No.	674	431	103	15	103	23
	%	100.0	64.0	15.2	2.3	15.2	3.3
Some post-secondary	No.	179	104	14	--	43	--
	%	100.0	58.2	8.0	--	23.8	--
Degree or diploma	No.	250	153	34	--	47	--
	%	100.0	61.3	13.8	--	18.6	--
Unknown	No.	--	--	--	-	--	-
	%	--	--	--	-	--	-
25-44:							
Total	No.	3,242	1,809	709	443	185	97
	%	100.0	55.8	21.9	13.7	5.7	3.0
Secondary or less	No.	2,147	1,114	494	326	125	88
	%	100.0	51.9	23.0	15.2	5.8	4.1
Some post-secondary	No.	234	140	56	22	--	--
	%	100.0	59.7	23.8	9.5	--	--
Degree or diploma	No.	853	549	158	92	50	--
	%	100.0	64.4	18.6	10.8	5.9	--
Unknown	No.	8	--	--	--	-	-
	%	100.0	--	--	--	-	-
45-64:							
Total	No.	2,279	814	494	542	272	157
	%	100.0	35.7	21.7	23.8	11.9	6.9
Secondary or less	No.	1,888	641	404	454	239	150
	%	100.0	34.0	21.4	24.1	12.6	7.9
Some post-secondary	No.	107	51	25	20	--	--
	%	100.0	47.9	23.5	18.7	--	--
Degree or diploma	No.	264	113	62	61	24	--
	%	100.0	42.8	23.6	23.2	9.3	--
Unknown	No.	19	--	--	--	--	--
	%	100.0	--	--	--	--	--
65 and over:							
Total	No.	1,132	165	154	264	409	140
	%	100.0	14.6	13.6	23.3	36.1	12.4
Secondary or less	No.	948	136	126	212	350	124
	%	100.0	14.4	13.3	22.3	37.0	13.0
Some post-secondary	No.	60	--	--	--	20	--
	%	100.0	--	--	--	33.7	--
Degree or diploma	No.	119	20	17	40	37	--
	%	100.0	16.4	14.4	33.2	31.4	--
Unknown	No.	--	-	--	--	--	--
	%	--	-	--	--	--	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 101.

TABLE 43. Female Population by Frequency of Breast Self-examination, by Age and Education, Canada, 1978-1979

Education		Total	Monthly	Quarterly	Less often	Never	Don't know how	Unknown
		in thousands						
Age 15 and over:								
Total	No.	**8,907**	**1,884**	**1,840**	**1,642**	**2,736**	**584**	**222**
	%	**100.0**	**21.1**	**20.7**	**18.4**	**30.7**	**6.6**	**2.5**
Secondary or less	No.	**6,666**	**1,341**	**1,270**	**1,116**	**2,260**	**481**	**198**
	%	**100.0**	**20.1**	**19.1**	**16.7**	**33.9**	**7.2**	**3.0**
Some post-secondary	No.	**697**	**153**	**157**	**166**	**178**	**34**	- -
	%	**100.0**	**22.0**	**22.5**	**23.8**	**25.5**	**4.9**	- -
Degree or diploma	No.	**1,498**	**378**	**402**	**351**	**288**	**66**	**14**
	%	**100.0**	**25.3**	**26.8**	**23.4**	**19.2**	**4.4**	**0.9**
Unknown	No.	**47**	- -	**12**	- -	**12**	- -	-
	%	**100.0**	- -	**25.0**	- -	**24.6**	- -	-
15-19:								
Total	No.	1,146	106	92	132	684	102	29
	%	100.0	9.2	8.0	11.5	59.7	8.9	2.5
Secondary or less	No.	1,009	92	79	108	616	86	29
	%	100.0	9.1	7.8	10.7	61.0	8.5	2.8
Some post-secondary	No.	117	- -	10	23	59	- -	- -
	%	100.0	- -	8.6	19.7	50.3	- -	- -
Degree or diploma	No.	11	- -	- -	- -	- -	- -	-
	%	100.0	- -	- -	- -	- -	- -	-
Unknown	No.	- -	-	- -	- -	- -	- -	-
	%	- -	-	- -	- -	- -	- -	-
20-24:								
Total	No.	1,108	243	229	231	300	91	- -
	%	100.0	21.9	20.6	20.8	27.1	8.2	- -
Secondary or less	No.	674	148	144	106	202	63	- -
	%	100.0	21.9	21.3	15.7	29.9	9.4	- -
Some post-secondary	No.	179	41	27	54	44	- -	- -
	%	100.0	22.7	14.9	30.0	24.4	- -	- -
Degree or diploma	No.	250	54	56	70	54	- -	-
	%	100.0	21.4	22.6	27.9	21.7	- -	-
Unknown	No.	- -	- -	- -	- -	-	-	-
	%	- -	- -	- -	- -	-	-	-
25-44:								
Total	No.	3,242	764	803	700	739	194	42
	%	100.0	23.6	24.8	21.6	22.8	6.0	1.3
Secondary or less	No.	2,147	487	490	447	537	152	33
	%	100.0	22.7	22.8	20.8	25.0	7.1	1.5
Some post-secondary	No.	234	60	64	55	44	- -	- -
	%	100.0	25.5	27.2	23.4	18.8	- -	- -
Degree or diploma	No.	853	214	246	197	158	34	- -
	%	100.0	25.1	28.8	23.1	18.5	4.0	- -
Unknown	No.	8	- -	- -	- -	- -	- -	- -
	%	100.0	- -	- -	- -	- -	- -	- -
45-64:								
Total	No.	2,279	573	522	415	574	118	79
	%	100.0	25.1	22.9	18.2	25.2	5.2	3.4
Secondary or less	No.	1,888	469	408	311	520	104	75
	%	100.0	24.8	21.6	16.5	27.6	5.5	4.0
Some post-secondary	No.	107	26	39	26	14	- -	- -
	%	100.0	24.0	36.7	24.3	12.7	- -	- -
Degree or diploma	No.	264	71	70	72	38	- -	- -
	%	100.0	26.8	26.4	27.2	14.2	- -	- -
Unknown	No.	19	- -	- -	- -	- -	- -	- -
	%	100.0	- -	- -	- -	- -	- -	- -
65 and over:								
Total	No.	1,132	198	195	163	439	79	58
	%	100.0	17.5	17.2	14.4	38.8	7.0	5.1
Secondary or less	No.	948	145	150	144	385	76	49
	%	100.0	15.3	15.8	15.1	40.7	8.0	5.1
Some post-secondary	No.	60	16	17	- -	18	-	- -
	%	100.0	26.3	28.4	- -	29.1	-	- -
Degree or diploma	No.	119	38	27	11	33	- -	- -
	%	100.0	31.5	22.9	9.3	27.8	- -	- -
Unknown	No.	- -	- -	- -	- -	- -	-	-
	%	- -	- -	- -	- -	- -	-	-

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 102.

Chapter III

Health Status

HEALTH STATUS

The World Health Organization has defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".[1] Unfortunately existing measures of health status are limited in that they focus on disease and ill-health, rather than on the positive aspects of well-being. Nevertheless the measures presented here, taken together, indicate the levels of health enjoyed by the Canadian population. Furthermore they show which causes are responsible for the greatest burden of ill-health and thus should be targets for research and prevention programs.

They are presented from four different sources:

- mortality from the vital statistics data base
- institutional morbidity from the administrative records of hospitals and psychiatric institutions
- disability measures for the non-institutionalized population from the Canada Health Survey
- incidence rates of selected diseases from the notifiable disease reporting system.

Mortality

Life expectancy at birth (or mean length of life) is a convenient way of summarizing the state of mortality, and is to some extent an overall indicator of the health status of the population.

[1] **WHO Study Group.** "Early detection of Health Impairment in Occupational Exposure to Health Hazards", WHO Technical Report Series, No. 571, 1975.

High life expectancy attained in industrialized nations attests to the success of the battle against infectious diseases, which were primarily a threat during the first year of life.

Canada has one of the highest average life expectancies of any country, for both males and females. It also has one of the largest life expectancy differences by sex: 7.3 years in 1976 (see Table 44).

TABLE 44. Life Expectancy at Birth by Sex, Selected Countries, Circa 1976

Country	Year	Males M	Females F	Difference F-M
		life expectancy		
Japan	1978	73.2	78.6	5.4
Sweden	1978	72.5	79.0	6.5
Switzerland	1978	72.0	78.9	6.9
Netherlands	1978	72.0	78.7	6.7
Denmark	1978	71.7	77.7	6.0
France	1976	69.9	77.9	8.0
Canada	1976	70.2	77.5	7.3
Spain	1976	70.8	76.7	5.9
Australia	1977	70.0	77.0	7.0
Israel	1978	71.6	75.1	3.5
United States	1977	69.4	77.3	7.9
England and Wales	1977	70.2	76.3	6.1
Cuba	1975	72.0	75.0	3.0
Italy	1975	69.8	76.1	6.3
Poland	1978	66.5	74.9	8.4
Portugal	1975	65.1	72.6	7.5

Source: **World Health Organization**, *World Health Statistics Annual 1980*, Geneva, WHO 1980, Table 10, pp. 378-379 and **Statistics Canada**, *Life Tables, Canada and Provinces*, 1975-1977, Catalogue 84-532, Occasional, October 1979.

TABLE 45. Life Expectancy at Birth by Sex, Canada and Provinces, 1931 and 1976

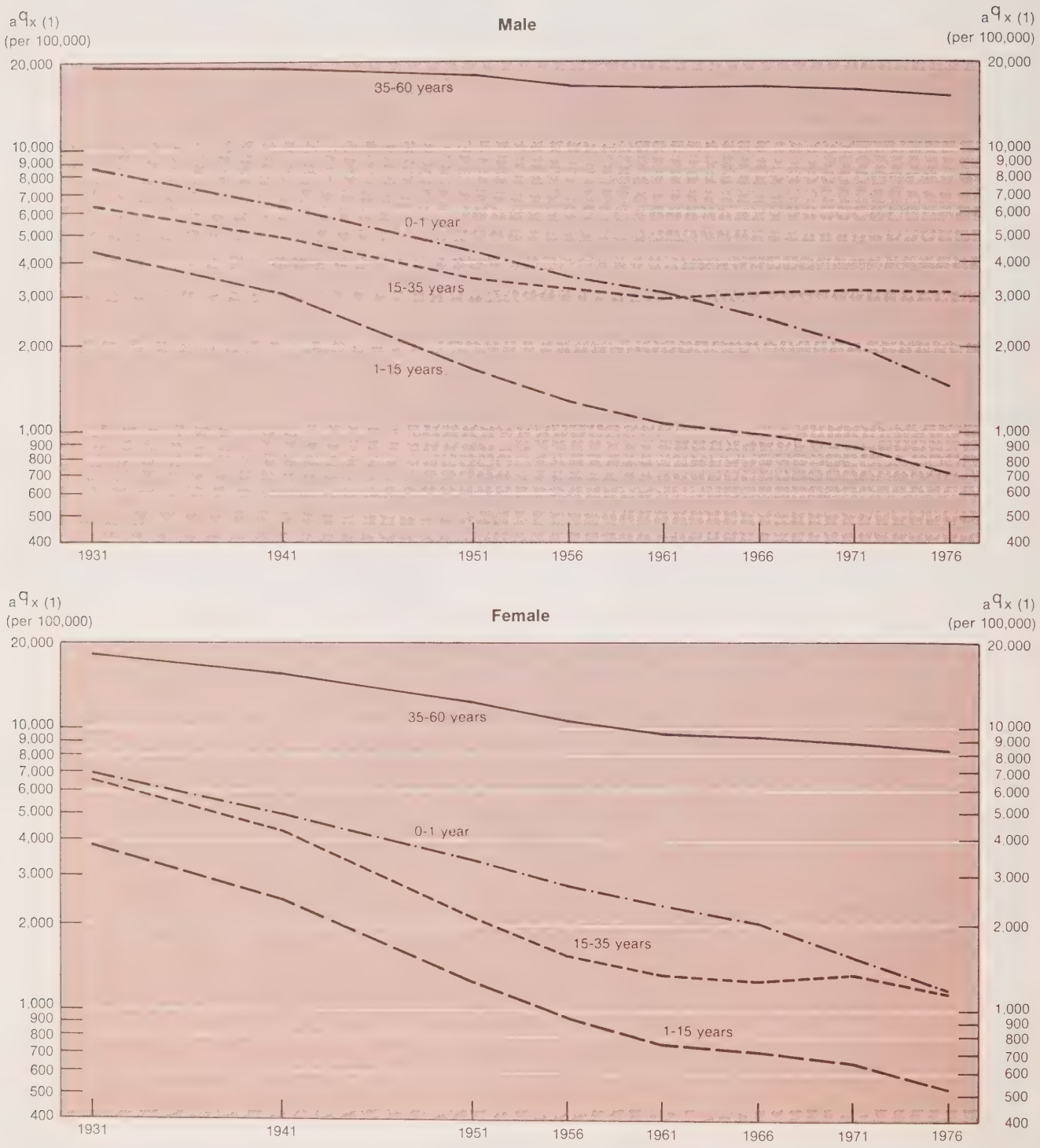
Region	1931 M	1931 F	1931 Difference F-M	1976 M	1976 F	1976 Difference F-M
	life expectancy					
Canada	**60.0**	**62.1**	**2.1**	**70.2**	**77.5**	**7.3**
Atlantic Provinces:	60.2	61.9	1.7			
Newfoundland				70.6	77.4	6.8
Prince Edward Island				69.2	78.2	9.0
Nova Scotia				69.5	77.8	8.3
New Brunswick				69.7	77.7	8.0
Quebec	56.2	57.8	1.6	69.1	76.5	7.4
Ontario	61.3	63.9	2.6	70.6	77.7	7.1
Prairie Provinces:	63.5	65.5	2.0			
Manitoba				70.7	77.9	7.2
Saskatchewan				71.1	78.6	7.5
Alberta				71.1	77.9	6.8
British Columbia	62.2	65.3	3.1	71.0	78.4	7.4

Source: **Statistics Canada**, *Life Tables, Canada and Provinces, 1975-1977*, Catalogue 84-532, Occasional, October 1979 and **Dominion Bureau of Statistics**, *Life Tables for Canada and Regions, 1941 and 1931*, Catalogue 84-515, Occasional, 1947.

Figure II

Risk of Dying for Selected Age Intervals, Canada, 1931-1976

Semi-logarithmic scale



(1) Probability at exact age x of dying before exact age x+a.

Source: Same as for Table 49

Table 45 indicates the progress that has been achieved over the past 45 years. Significant strides have been made in all areas of the country, but the gap between males and females at the national level has widened considerably, from 2.1 years in 1931 to 7.3 years in 1976.

Three questions bear asking: How have the risks of dying changed? What are the causes of death? Are we equal in the face of death?

Changes in Mortality, All Causes, 1931-1976

The following is limited to some general observations on three important characteristics of the evolution of mortality[2] during the period in question: the decline in premature death, the rate of progress in mortality control, and the transition in excess male mortality.[3]

Decline in Premature Death

As mentioned previously, the progress achieved over the past 45 years has resulted in an increase in life expectancy at birth of 10.2 years for males and 15.4 years for females (Table 46). These figures are misleading, since they would lead one to believe that the increased life expectancy stems from a longer old age. As Table 46 indicates, this is really true only of females, since their life expectancy at age 60 increased by close to five years between 1931 and 1976, compared to less than one year for males.

TABLE 46. Life Expectancy at Birth and at Age 60 by Sex, Canada, 1931-1976

Year	Males		Females	
	At birth	60 years	At birth	60 years
	in years			
1931	60.0	16.3	62.1	17.2
1941	63.0	16.1	66.3	17.6
1951	66.3	16.5	70.8	18.6
1956	67.6	16.5	72.9	19.3
1961	68.4	16.7	74.2	19.9
1966	68.8	16.8	75.2	20.6
1971	69.3	17.0	76.4	21.4
1976	70.2	17.2	77.5	22.0
Gains (1931-1976):	10.2	0.9	15.4	4.8

Source: Statistics Canada, Life Tables (1930-1932 to 1975-1977)

The primary change since 1931 has been not so much the length of old age as the proportion of the population reaching it. Under prevailing conditions in 1931, 66% of the male population could expect to reach the age of 60; by 1976 the proportion had increased to 80%; the corresponding figures for females were 68% and 89%. An ever-increasing number of persons are getting the opportunity to live through the various stages of a normal life cycle: childhood, youth, maturity and old age.[4]

Table 47 highlights this decline in premature mortality by quantifying the reduction of risks for broad age groups. Significant progress has been achieved for males of 15 years and under and for females of 35 years and less. Some results of this change are striking. For example, mortality tables show that a Canadian male and a Canadian female in 1976 had as much chance of reaching their 47th and 53rd birthdays, respectively, as they had of reaching their first birthdays in 1931.

TABLE 47. Decline[1] in Mortality Risks by Age and Sex Between 1931 and 1976, Canada

Age intervals	Males	Females
	per cent	
Under 1 year	83.0	82.8
1-15 years	83.4	86.2
15-35 "	49.4	82.1
35-60 "	19.2	54.4
60-85 "	6.0	27.0

[1]Expressed as a percentage of the risk observed in 1931.

Source: Statistics Canada, *Life Tables, Canada and Provinces 1975-1977*, Catalogue 84-532, October 1979; and **Dominion Bureau of Statistics**, *Life Tables for Canada and Regions, 1941 and 1931*, Catalogue 84-515, Occasional, 1947.

Rate of Progress In Controlling Mortality

Considering the period 1931-1976 as a whole, the progress described above was accompanied by a deceleration[5] in the increase of life expectancy at birth (Table 48). However, during the five-year periods 1966-1971 and 1971-1976, life expectancy increased at an accelerated rate among males and at a stable rate among females.

Changes in mortality risks provide a much better indication of the deceleration in mortality decline and the ages at which it occurs than alterations in life expectancy.

In Figure II, changes in mortality risks[6] are reproduced as semi-logarithmic graphs for a few broad age groups; it

[2] For a more detailed study on Canada containing selected international comparisons, see **Duchesne, L. and Lavoie, Y.,** "Les tables de mortalité canadienne et québécoise, 1970-1972", Population et famille, Vol. 35, 2, 1975, pp. 107-125; and **Wilkins, R.,** *Health Status in Canada, 1972-1976,* Occasional Paper No. 13, Montréal, Institute for Research on Public Policy, May 1980, pp. 7-16. See also **Péron, Y.,** "Tendances récentes de la morbidité et de la mortalité à l'âge adulte dans les pays développés", paper presented at the *Chaire Quételet sur la morbidité et la mortalité aux âges adultes dans les pays développés*, Louvain-La-Neuve (Belgium), May 1982, to be published.

[3] Essentially the same delineation is used in the **Dufour, D. and Péron, Y.,** study segment on which the analysis presented in this section is modeled; see pages 49 to 60 of *Vingt ans de mortalité au Québec. Les causes de décès, 1951-1971* (Collection *"Démographie canadienne"*, No. 4), Presses de l'Université de Montréal, 1979.

[4] *Idem.*, p. 52.

[5] It should be noted, however, that contrary to what one might believe, the diminution in average life gains does not in itself signify the end of the progress in the fight against mortality. "The maintenance of constant progression in life expectancy at birth requires not a constant decline in mortality but rather an accelerated decline in mortality" (**Dufour, D. and Péron, Y.,** *op. cit.*, page 54).

[6] It should be noted that this risk is the risk of dying between two birthdays; for the 15-35 age group, for example, it is the probability of persons aged 15 dying before their 35th birthday.

TABLE 48. Average Life Expectancy Gains, by Sex, Canada, 1931-1976

Period	Males	Females
	years	
1931-1941	3.0	4.2
1941-1951	3.3	4.5
1951-1961	2.1	3.4
1951-1956	1.3	2.1
1956-1961	0.8	1.3
1961-1971	0.9	2.2
1961-1966	0.4	1.0
1966-1971	0.5	1.2
1971-1976	0.9	1.1

Source: **Statistics Canada**, Life Tables, Canada and Provinces (1930-1932 to 1975-1977).

should be noted that in this type of graph, a steady evolution of these risks in time will appear as a straight line. The regularity of the decline in infant mortality (i.e., during the first year of life) up to 1961 and its acceleration since then are apparent. Instead, a slowing of the decline might have been expected, because once the controllable causes have been eliminated, those largely remaining (accidents, endogenous causes) are less easy to control.

In the 1-60 age group, three phases in the changes in mortality risks can be identified between 1931 and 1976.[7] Initially, between 1931 and 1956, risks declined at an increasing rate. Subsequently, at the end of the 1950's the decline slowed somewhat, at a time when major successes partly due to the antibiotic revolution had run their course; there was even a deterioration in the situation of the 15-34 age group. Finally, the decline in risks accelerated again during 1966-1971 and 1971-1976; for the 15-34 age group, whose risks had increased temporarily, the acceleration occurred the latest.

In the 60-84 age group, males underwent the same three-phase evolution, although less pronounced; the decline in female mortality in this age group accelerated until the end of the 1950's, then continued at a steady rate.

The Transition of Excess Male Mortality

As has been seen, the evolution of mortality over the past 45 years has been more favourable to females; as a result, the overall differences by sex have become more pronounced (Table 49). Excess mortality among males emerged in an age group (15-34 years) in which males had formerly enjoyed a greater chance of survival than females; however, the gap between the sexes in the other age groups, where excess mortality was already a factor in 1931, has widened considerably. This evolution is summarized in Table 49, which shows, among other things, that whereas males aged 15 had slightly less risk of dying before their 35th birthday than females, they now have 2.7 times as great a risk.

TABLE 49. Index of Excess Mortality[1] Among Males, Canada, 1931-1976

Year	Age intervals				
	0-1 year	1-15 years	15-35 years	35-60 years	60-85 years
1931	125.5	112.6	94.1	107.2	103.6
1941	126.7	122.1	113.0	121.6	106.8
1951	126.4	132.4	161.0	146.1	109.7
1956	125.5	137.3	209.2	159.9	113.2
1961	128.1	144.3	221.2	173.2	116.5
1966	125.7	137.5	241.0	180.0	121.7
1971	129.7	137.1	238.8	182.4	128.4
1976	124.2	135.6	265.6	190.0	133.3

[1] For a given age interval we have:

$$\text{Index of excess mortality among males} = \frac{\text{Mortality risk for males}}{\text{Mortality risk for females}} \times 100.$$

Source: Same as for Table 48.

This evolution is better illustrated in Figure III. The practically constant level of male excess mortality from birth to first birthday is immediately apparent. The other age groups are characterized by a transition from a state of low excess mortality to a state of high excess mortality. This transition took place mainly in the 1940s and 1950s.

The Causes of Death

What are the causes of death in Canada? Since death is inevitable, it is more significant to know the causes of *premature* death and their importance. This type of information is vitally important in the health field, particularly in the area of prevention.

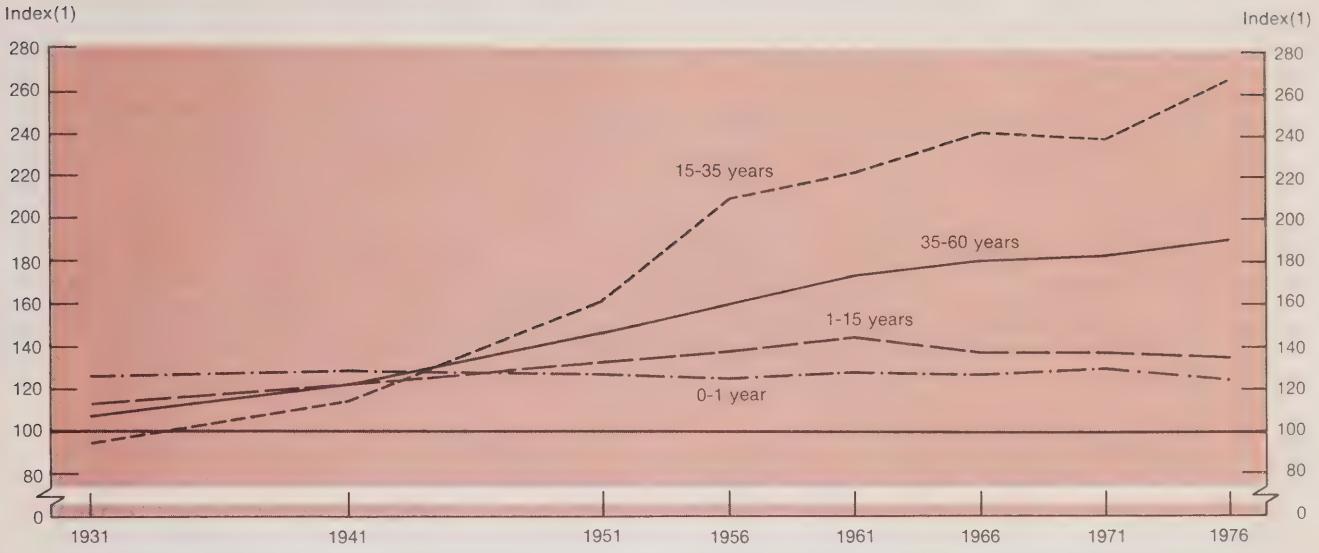
Table 50 shows the distribution of deaths by main cause for the whole population in 1978. Deaths from these causes accounted for slightly more than 70% of total deaths. It is immediately apparent that apart from accidents and violent deaths, causes are limited almost exclusively to diseases related to the degenerative processes, such as arteriosclerosis and tumors. This is essentially what distinguishes the mortality of today from that of the turn of the century, when infectious diseases were the leading cause of death. "Whereas the major problems of the past were acute illnesses, which have a fairly abrupt onset and a finite duration, the major problems now are chronic illnesses, which have a gradual onset and an indefinite duration, and accidents."[8]

[7] These three phases are also perceptible in the first year of life, despite the apparent regularity of the decline in mortality at that age since 1931, the beginning of the period considered. Note also that between 1961 and 1966, the decline in mortality in the under-one age group began earlier than in the other age groups considered.

[8] **Lalonde, M.**, *A New Perspective on the Health of Canadians* (a working document), Department of National Health and Welfare, Ottawa, 1974, p. 24.

Figure III

Differential Mortality by Sex for Selected Age Intervals, Canada, 1931-1976



(1) $\frac{\text{Risk of dying for males}}{\text{Risk of dying for females}} \times 100$

Source: Table 49

The potential years of life lost (PYLL) is a very useful indicator when considering premature deaths. It allows heavier weight to be given to deaths occurring at a younger age. This calculation is generally applied only to deaths occurring between the 1st and 70th birthdays, and considers premature any death occurring prior to the age of 70.[9]

Table 51 gives the results of this calculation for a few causes of death in 1978. The importance of the cause varies according to whether the number of deaths or the corresponding number of years of life lost is considered. For example, ischaemic heart diseases are responsible for one quarter of the deaths between the ages of 1 and 70, but only 15% of the PYLL, whereas traffic accidents account for a comparable number of PYLL but only 6.5% of the deaths. As might be expected, these differences are due to the ages at which these deaths occur: heart disease occurs among relatively elderly persons, whereas fatal traffic accidents occur primarily among the young. Considered in this perspective, the various types of accidents (AE 138-146) have a significant impact since they accounted for approximately 27% of the PYLL in 1978.

The "rate of PYLL" can be used to make comparisons over time (or between two populations). The result is then expressed as the number of PYLL per 1,000 persons aged 1 to 70. In table 52 which shows such a calculation for Canada starting in 1950, a rapid and regular decline in the rate of PYLL for all causes of death, is evident. This is another way of quantifying the decline in premature mortality: for every 1,000 population (aged 1 to 70) in 1978, 57 years of life were lost prematurely compared with 84 in 1950. This indicates the considerable progress that has been achieved.

Apart from ischaemic heart disease, the rate of PYLL for causes listed in Table 52 has either fluctuated little (accidents involving motor vehicles) or increased steadily (suicide, lung cancer, cirrhosis of the liver). Since the "all causes" rate has declined considerably, the causes which are rising are becoming increasingly important.

Mortality Differentials

Just as certain segments of the population are unequal in the face of disease, so are they in the face of death.[10]

The mortality of different population groups differs according to their socio-economic characteristics. Such differences have been shown in studies conducted in the

[9] For further details, see **Romeder, J.-M. and McWhinnie, J.R.**, *The Development of Potential Years of Life Lost as an Indicator of Premature Mortality*, Staff Paper No. 77-2, Long Range Health Planning Branch, Department of National Health and Welfare, February 1977, 25 pages.

[10] A recent work was devoted to this subject; see **Sureault, Pierre**, *L'inégalité devant la mort*, Paris, Economica, 1979, 140 pages.

TABLE 50. Deaths by Major Causes, Canada, 1978

Cause of death	ICDA code (8th revision) list A	Deaths (both sexes)	
		number	%
Ischaemic heart disease	A83	50,613	30.1
Cerebrovascular disease	A85	15,183	9.0
Malignant neoplasm of digestive organs and peritoneum	A46-49,58A	11,540	6.9
Disease of respiratory system	A89-96	11,083	6.6
Malignant neoplasm of respiratory system (trachea, bronchus, larynx, etc.)	A50-51,58B	8,572	5.1
Accidents (other than motor vehicle)	AE139-146	5,993	3.6
Motor Vehicle Accidents	AE138	5,170	3.1
Suicide	AE147	3,475	2.1
Malignant neoplasm of breast	A54	3,308	2.0
Cirrhosis of liver	A102	2,838	1.7
Diseases of the nervous system and sense organs	A72-79	1,898	1.1
Sub-total		119,673	71.2
Other causes		48,506	28.8
TOTAL ALL CAUSES		**168,179**	**100.0**

Source: **Statistics Canada**, *Vital Statistics, Vol. III, 1978*, Catalogue 84-206, June 1980, Table 4.

United States, France and Great Britain.[11] A study by Pierre Surault indicates that:

> Social standing therefore appears to be a determining factor in the mortality differentials recorded for the various social classes. The study of the causes of death should shed new light on the analysis because mortality differentials are in large part attributable to morbidity differentials, and the mortality of persons of a given age due to a given cause will vary according to the social class to which these persons belong.[12]

This type of research is less advanced in Canada due to a lack of adequate data. The work of Jacques Henripin has established a relationship between underprivileged socio-economic areas and high infant mortality rates.[13] More recently, André Billette and Gerry Hill demonstrated the existence of mortality differentials between persons of different occupational classes.[14] Finally, Russell Wilkins pointed up significant mortality differentials between various districts of Montreal;[15] among other things, he notes that:

> "Life expectancy for one-fifth of the city, 68 years, remains at the level reached for Canada as a whole by about 1949. On the other hand, life expectancy for the most fortunate fifth of the city, 75 years, has already reached the level projected for Canada in 1981."[16]

Conclusion

Significant progress in the fight against mortality was thus achieved between 1931 and 1976, enabling a larger number of persons to live through the various stages of a normal life cycle.

The causes of premature death have changed. Infectious diseases were a leading cause at the turn of the century. Now accidents and diseases linked to the degenerative processes head the list. A large proportion of the causes of death are now related to our environment and lifestyles.

[11] Among these, are **Kitawaga, E. and Hauser, P.**, *Differential Mortality in the United States. A study in Socio-economic Epidemiology*, Harvard University Press, 1973, and **Desplanques, G.**, "À 35 ans, les instituteurs ont encore 41 ans à vivre, les manœuvres 34 ans seulement", *Économie et statistique*, No. 49, October 1973.

[12] **Surault, P.**, *op. cit.*, p. 63.

[13] See "L'inégalité sociale devant la mort: la mortinatalité et la mortalité infantile à Montréal", *Recherches sociographiques*, Vol. 11, 1961, pp. 3-34.

[14] See "Risque relatif de mortalité masculine et les classes sociales au Canada, 1974", *Union médicale du Canada*, Vol. 107, June 1978, pp. 583-590.

[15] See *L'espérance de vie par quartier à Montréal, 1976*, Montréal, Institute for Research on Public Policy, 1979.

[16] *Health Status in Canada, 1926-1976, op. cit.*, p. 23.

TABLE 51. Potential Years of Life Lost (PYLL), by Sex and Selected Causes, Canada, 1978

Cause of death	ICDA code (8th revision) list A	PYLL between 1 and 70 years				Deaths between 1 and 70 years (both sexes)	
		Males	Females	Both sexes			
		number		number	%	number	%
Motor vehicle accidents	AE 138	142,049	48,650	190,699	15.2	4,762	6.5
Ischaemic heart disease	A 83	149,740	38,388	188,128	15.0	18,607	25.4
Accidents (other than motor vehicle)	AE 139-146	112,587	31,695	144,282	11.5	4,222	5.8
Suicide	AE 147	80,693	22,995	103,688	8.3	3,237	4.4
Sub-total		485,069	141,728	626,797	50.0	30,828	42.0
Other causes		367,739	259,849	627,588	50.0	42,497	58.0
TOTAL ALL CAUSES		**852,808**	**401,577**	**1,254,385**	**100.0**	**73,325**	**100.0**

Source: **Statistics Canada**, *Vital Statistics, Vol. III, 1978*, Catalogue 84-206, June 1980, Table 4.

TABLE 52. Rate[1] of Potential Years of Life Lost Between Ages 1 and 70 by Selected Causes,[2] Canada, 1950-1978

Year	All causes	Motor vehicle accidents	Ischaemic heart disease	Suicide	Lung cancer	Cirrhosis of liver
			years per 1,000			
1950	84.0	6.0	-	1.9	0.9	0.6
1960	66.6	9.1	-	2.2	1.3	0.8
1970	63.1	10.1	10.3	3.5	1.9	1.2
1972	64.7	11.6	9.7	3.9	2.0	1.5
1974	63.3	11.5	9.6	4.1	2.2	1.7
1976	58.2	9.0	9.0	4.1	2.1	1.7
1978	56.8	8.7	8.4	4.7	2.4	1.6

[1] These are standardized rates expressed in years (potential years of life lost) per 1,000 population between ages 1 and 70. The population enumerated on June 1st, 1976 has been taken as standard population.

[2] For causes of death, the categories used correspond to revisions of the International Classification of Diseases then in use, i.e., 6th Revision for 1950, 7th for 1960, 8th for 1970 and beyond.

Source: Statistics Canada, *Vital Statistics*,Catalogue 84-202 (1950, 1960 and 1970) and Catalogue 84-206, Vol. III (1972, 1974, 1976 and 1978). For years 1950 to 1976, rates were taken from **Ouellet, B.** *Health Field Indicators*, Health and Welfare Canada, September 1979, Table 9, p. 68.

In spite of the progress achieved, disparities persist and in some cases are even becoming more pronounced. The best-known example of this is excess male mortality. However, life expectancy can also vary widely among persons of the same sex according to their social class.

Institutional Morbidity

The illnesses which require treatment in hospital are the basis for two other measures related to health status, the total days hospital care provided and number of cases admitted to or discharged from the hospital. The latter measure is not related to the number of persons admitted since one individual can be admitted several times. These measures do not reflect the health status of the *population* in the way that mortality figures do because factors other than health status are involved. The facilities and services available, the individual's decision to seek treatment, and the attending physician's decision on whether and how long, hospitalization is required all affect the data. Yet institutional morbidity statistics do present information regarding ill-health, rather than death, thus giving another part of the picture.

In this section the measure used to express morbidity in general hospitals is patient-days rather than the number of patients leaving hospital or dying because it reflects to a greater degree the actual burden of ill-health.

The leading causes of hospitalization are heart disease, stroke, accidents, mental disorders and respiratory disease (Figure IV and Table 53). These, except for mental disorders, are also leading causes of death.

The number of patient-days per 1,000 population for the leading causes of hospitalization are shown in Figure V and Table 54. Rates for accidents and respiratory disease have dropped considerably since 1975 while the rates for heart disease, stroke and mental disorders appear to have levelled off.

Figure VI illustrates the causes which individually account for at least 2% of hospital days in different age and sex groups.

For babies less than one year of age and for children 1 to 14 years, respiratory diseases are by far the leading cause of hospitalization, accounting for 35% of hospital days for the first group and 21% for the second. Infectious diseases are the next leading cause of hospitalization for babies, while accidents are second for children.

Childbirth, accidents and mental disorders are the three leading causes of hospitalization for both the 15-24 and 25-44 year old age groups. In the former case they account for 26%, 14% and 11% of hospital days, while in the latter, delivery represents 17% of all hospital days, followed by mental disorders (12%) and accidents (7%). It is significant that young men experience over three times the number of days in hospital because of accidents as young women.

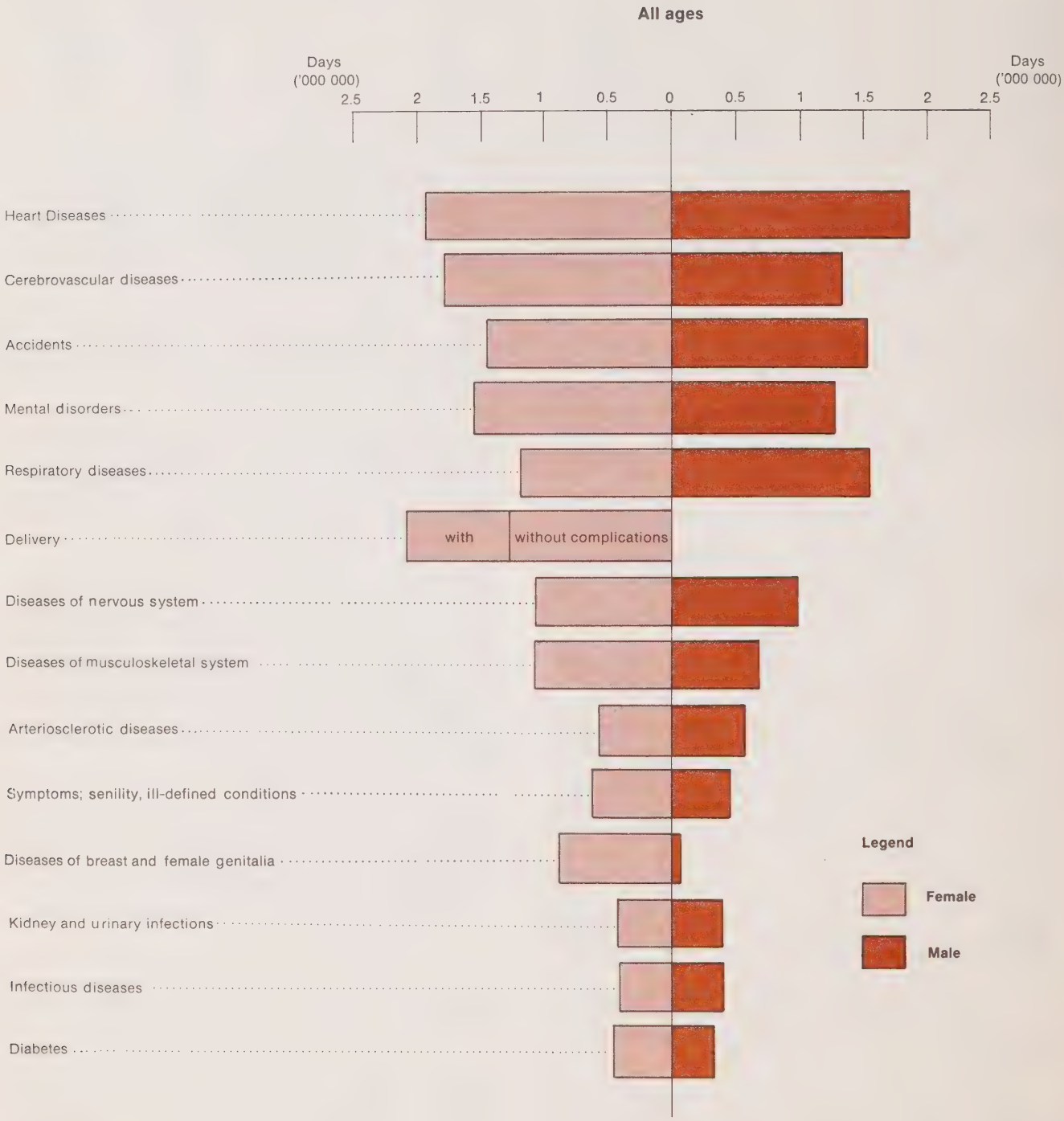
For persons aged 45 to 64 years, heart disease is the leading cause of hospitalization, accounting for 10% of all hospital days. Other causes of hospitalization for this age group are mental disorders, representing 8% of hospital days, followed by diseases of the nervous system (7%), diseases of the musculoskeletal system (6%), accidents, respiratory disease and stroke (each 5%).

For the elderly (over 65 years), the leading causes of hospitalization are heart disease (26%), stroke (15%), accidents (7%) and respiratory disease (7%).

Accidents are responsible for over 5% of hospital days at all ages except in infancy. Respiratory diseases are significant in the young and the old, while mental disorders are a leading cause for persons of working age, between 15 and 64 years. Heart disease and stroke are notable causes of hospitalization for the middle aged and elderly.

Figure IV

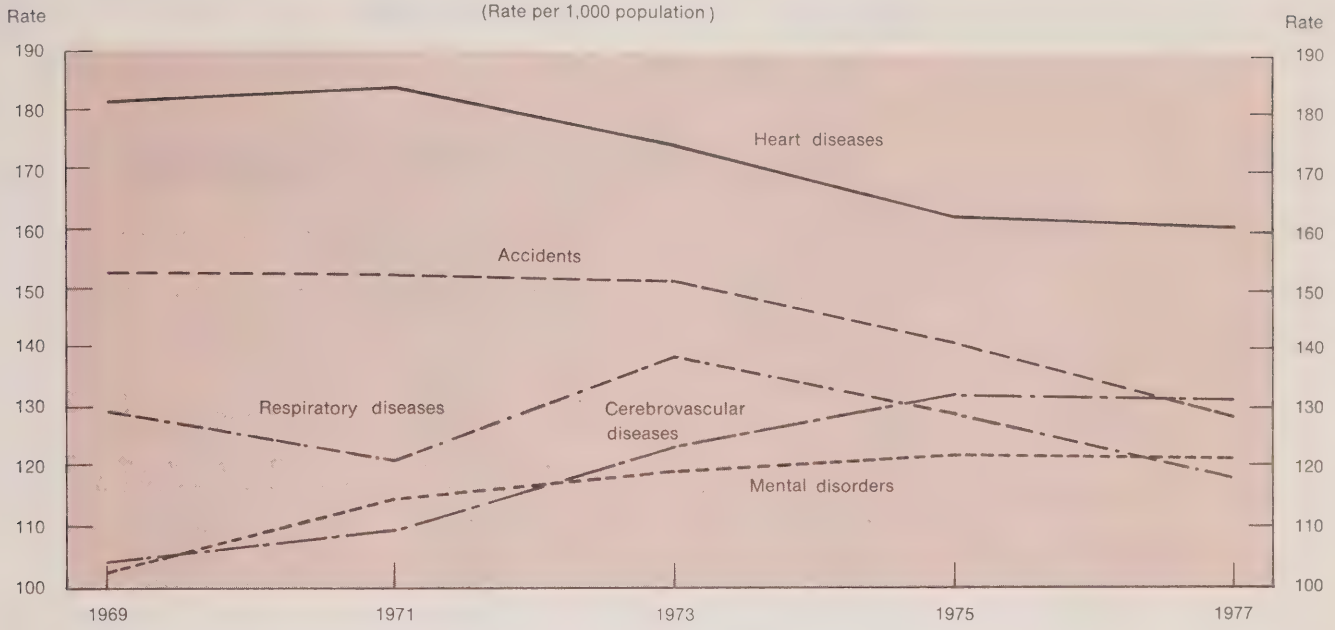
Patient-days by Major Causes, General and Allied Special Hospitals, by Sex, Canada, 1977



Source: Institutional Care Section, Health Division, Statistics Canada

Figure V

Rate of Patient-days, in General and Allied Special Hospitals, by Selected Causes, Canada, 1969-1977



Source: Institutional Care Section, Health Division, Statistics Canada

Mental Disorders

Mental disorders are treated both in mental institutions and in the psychiatric units of general hospitals and account for 7% of all patient-days. Information from both types of institutions is combined in Tables 55 and 56. Three different measures are examined: patient-days; first admissions, which measures the incidence of mental disorders; and readmissions, which counts the number of events, since one individual may be admitted several times.

Although the role of general hospitals in treating mental disorders is often not recognized, nearly as many days are spent in general hospitals for mental disorders as in mental institutions. Women are more likely than men to be treated in a general hospital, particularly for neuroses and personality disorders.

Neuroses are the most important cause of hospitalization for mental illness, accounting for 24% of psychiatric patient-days. Schizophrenia is a close second at 22.4% and psychoses are third at 22.3%. Half the patient-days for neuroses and psychoses are spent in general hospitals, and nearly two-thirds of patient-days for schizophrenia in mental institutions. Only 16% of patient-days for mental retardation are spent in general hospitals.

For women, the two most important causes of patient-days and for admissions are neuroses and psychoses. Men experience the largest number of patient-days for schizophrenia, followed by alcoholism and neuroses. This is in contrast with the admissions data which show alcoholism as the most important cause, followed by neuroses and schizophrenia, and reflects the longer stays for schizophrenia.

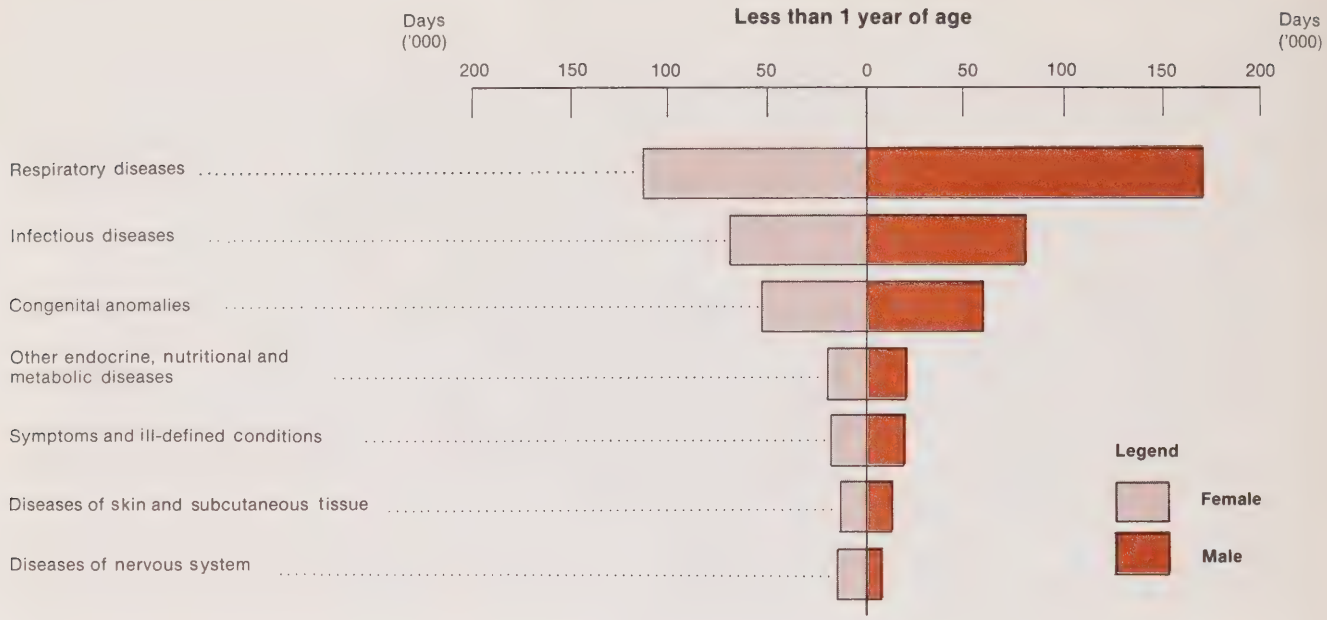
Neuroses, including anxiety, phobias and reactions to stress, remain the leading cause of both first admissions and readmissions to psychiatric facilities, accounting for 39% of the former and 26% of the latter. Psychoses such as paranoia, drug intoxication and maniac-depressive states are the second leading cause of first admissions (21%), but only third for readmissions (22%). Schizophrenia accounts for 25% of readmissions, thus being the second leading cause in that category.

Alcoholism is responsible for 27% of first admissions, and is the third most important reason for men to be admitted to psychiatric facilities, accounting for over one quarter of all admissions for males. Men are four times as likely as women to be admitted for alcoholism. On the other hand, women are approximately one and a half times as likely as men to be admitted for neuroses or psychoses.

Hospital morbidity data thus reinforce the need for dealing with the leading causes of death - heart disease, stroke, accidents and respiratory disease. They also point out the considerable burden of ill-health imposed by mental disorders. Nearly 60,000 individuals a year are admitted for the first time for treatment of mental problems and nearly five million days of care are provided in

Figure VI

Patient-days by Major Causes, General and Allied Special Hospitals, by Sex, Canada, 1977



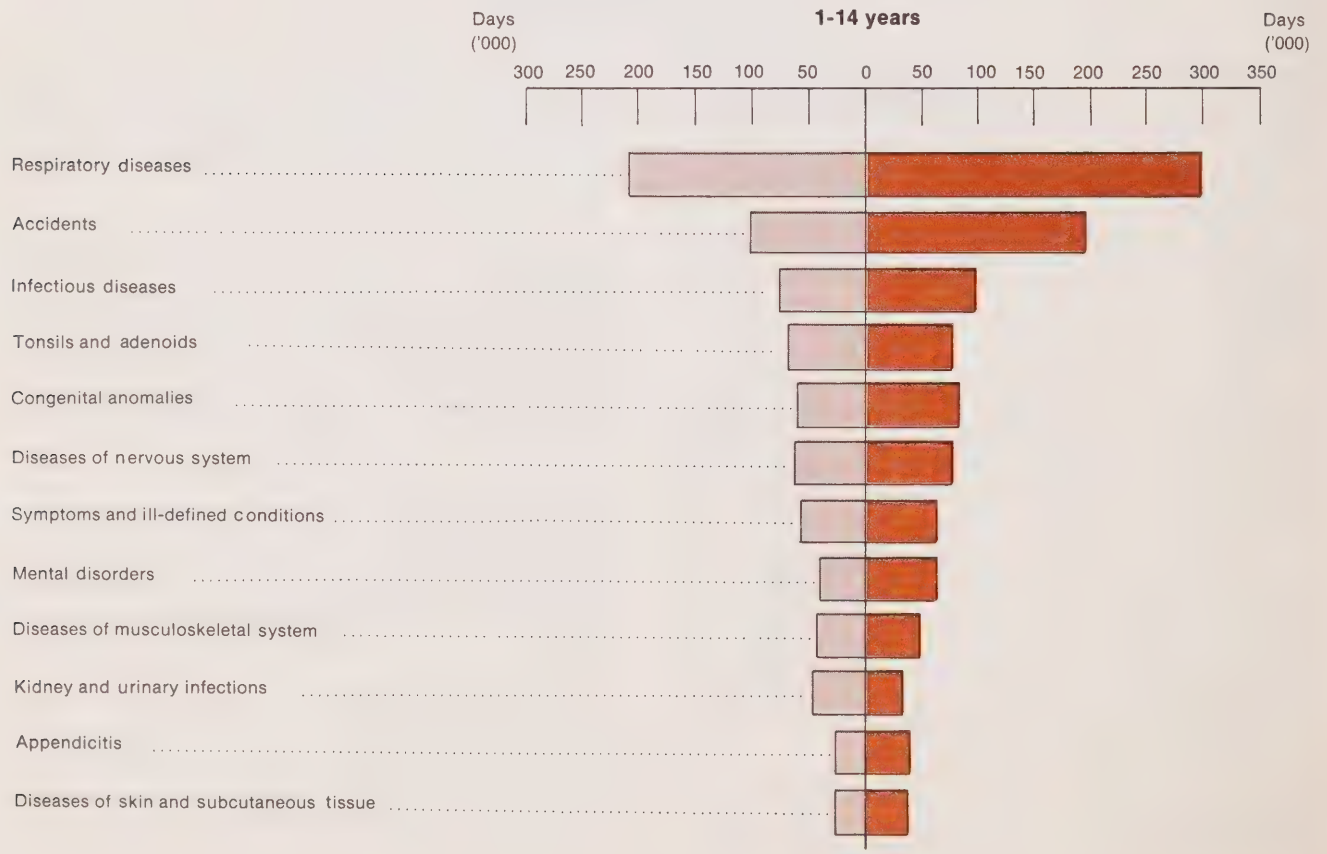


Figure VI (continued)

Patient- days by Major Causes, General and Allied Special Hospitals, by Sex, Canada, 1977

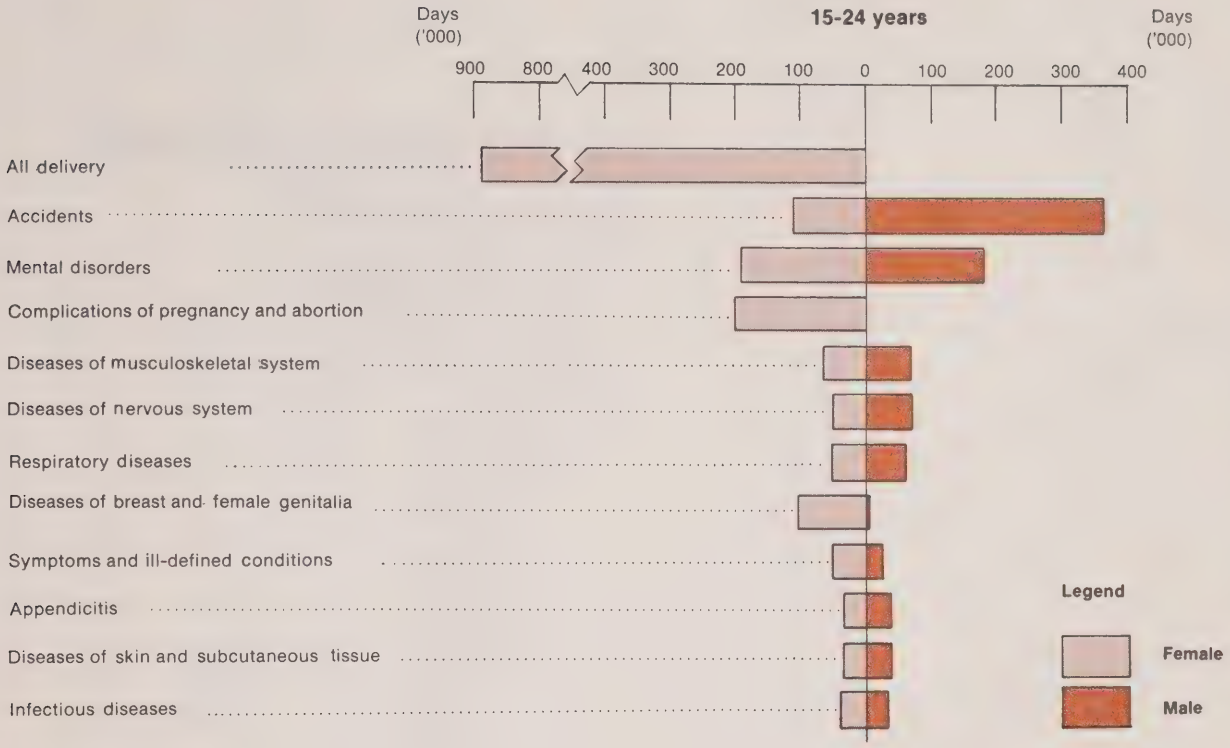
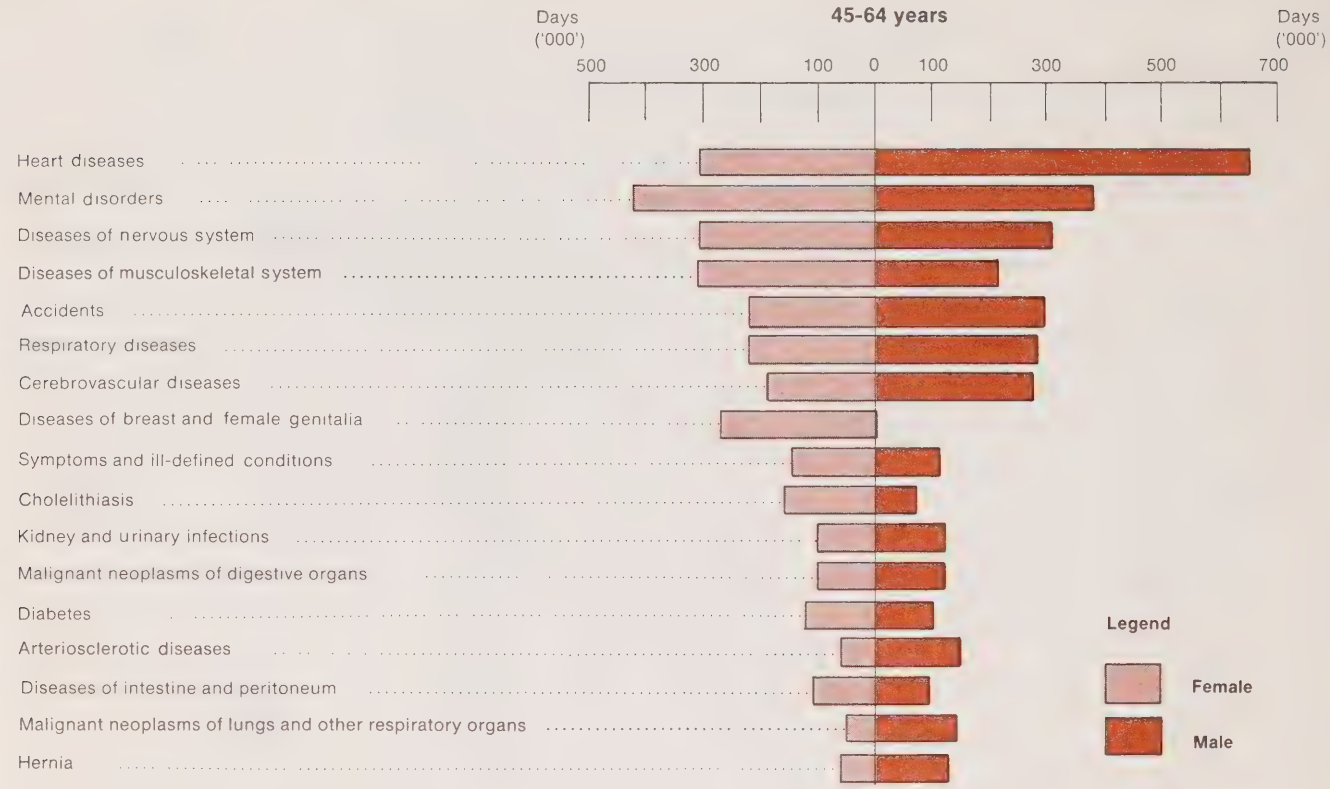
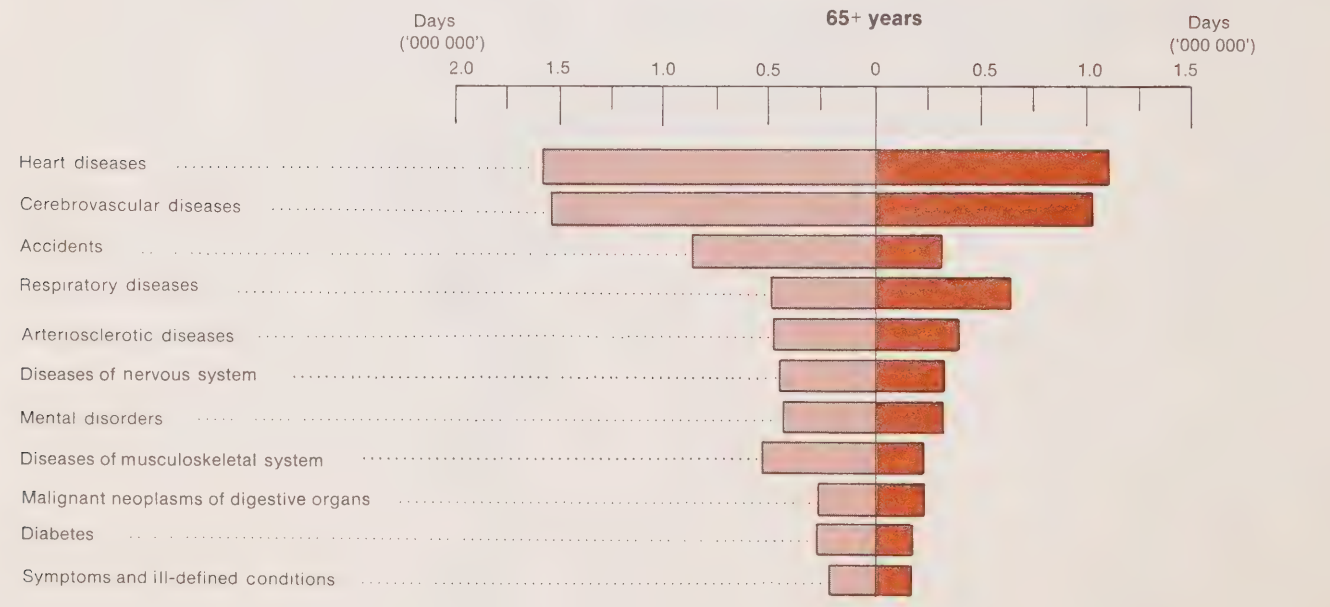


Figure VI (concluded)

Patient-days by Major Causes, General and Allied Special Hospitals, by Sex, Canada, 1977





Source: Institutional Care Section, Health Division, Statistics Canada.

TABLE 53. Patient-days in General and Allied Special Hospitals by Sex and Cause, 1977

ICDA Code	Cause	Total	Per cent	Male	Female
410-414, 420-429	Heart disease	3,808,234	9.52	1,879,724	1,928,510
	A) Ischaemic heart disease	2,815,391		1,415,611	1,399,780
	B) Other forms of heart disease	992,843		464,113	528,730
430-438	Cerebrovascular disease	3,119,015	7.80	1,348,750	1,770,265
N800-N959	Accidents	2,994,635	7.49	1,539,624	1,455,011
	A) Fractures and intercranial injuries	1,929,430		993,947	935,483
	B) Other trauma	1,065,205		545,677	519,528
290-315	Mental disorders	2,854,040	7.14	1,295,859	1,558,181
	A) Alcoholic psychosis	62,956		47,087	15,869
	B) Other psychosis	1,270,283		537,776	732,507
	C) Neurosis and personality disorders	1,445,894		671,634	774,260
	D) Mental retardation	74,907		39,362	35,545
460-493, 501-519	Respiratory diseases	2,754,855	6.89	1,564,686	1,190,169
	A) Acute upper respiratory infection	428,757		241,674	187,083
	B) Influenza	67,448		29,171	38,277
	C) Pneumonia	916,279		472,755	443,524
	D) Bronchitis and emphysema	427,989		276,838	151,151
	E) Asthma	221,929		106,211	115,718
	F) Other respiratory diseases	692,453		438,037	254,416
650-662, 670-678	All deliveries	2,094,745	5.24	-	2,094,745
	A) Delivery without complication	1,274,934		-	1,274,934
	B) Delivery with complication	819,811		-	819,811
320-358	Diseases of the nervous system	2,052,397	5.13	984,708	1,067,689
	A) Hereditary and familial diseases of the nervous system	87,157		56,673	30,484
	B) Other diseases	1,965,240		928,035	1,037,205
710-718, 720-729, 730-738	Diseases of musculoskeletal system	1,778,360	4.45	691,584	1,086,776
	A) Rheumatoid arthritis	383,920		92,549	291,371
	B) Osteo-arthritis	461,084		174,101	286,983
	C) Other diseases of musculoskeletal system	933,356		424,934	508,422
440-448	Arteriosclerotic disease	1,137,489	2.84	577,148	560,341
	A) Arteriosclerosis	623,480		241,203	382,277
	B) Other arteriosclerotic disease	514,009		335,945	178,064
780-792, 794-796	Symptoms, senility and ill-defined conditions	1,095,807	2.74	470,252	625,555
610-629	Diseases of breast and female genitalia	902,666	2.26	7,499	895,167
580-584, 590-599	Infections of kidney and urinary system	824,931	2.06	414,306	410,625
	A) Nephritis and nephrosis	126,674		69,525	57,149
	B) Infections of kidney	86,104		22,893	63,211
	C) Infections of urinary system	237,482		136,234	101,248
	D) Other diseases of urinary system	374,671		185,654	189,017
000-136	Infectious diseases	811,808	2.03	413,700	398,108
250	Diabetes	802,237	2.01	344,709	457,528
	Other causes	12,962,425	32.41	6,003,891	6,958,534
	TOTAL (ALL CAUSES)	**39,993,644**	**100.00**	**17,536,440**	**22,457,204**

Source: Institutional Care Section, Health Division, **Statistics Canada.**

TABLE 54. Rates[1] of Patient-days in General and Allied Special Hospitals, by Selected Causes, Canada, 1969-1977

Cause of death	1969	1971	1973	1975	1977
Heart disease	181.76	184.04	174.95	162.50	161.29
Accidents	152.84	152.52	151.46	140.87	127.76
Respiratory diseases	129.01	120.08	138.78	128.82	117.94
Cerebrovascular disease	104.92	109.65	123.03	132.12	131.78
Mental disorders	102.84	114.48	119.37	121.75	121.71
TOTAL (ALL CAUSES)	**1,966.5**	**1,983.9**	**1,927.1**	**1,843.6**	**1,703.5**

[1] Standardized rates per 1,000 population (the population enumerated on June 1st, 1976 has been taken as standard population).
Source: Institutional Care Section, Health Division, **Statistics Canada**.

TABLE 55. Psychiatric Inpatient Facilities[1] Distribution of First Admissions and Readmissions by Major Causes[2], by Sex, Canada, 1977

Cause[2]		Total (males and females)	Percentage	Males	Females
		number		number	
Neuroses	1st Admission	23,034		9,051	13,983
	Readmission	16,634		5,762	10,872
	Total	39,668	32.0	14,813	24,855
Psychoses	1st Admission	12,633		5,375	7,258
	Readmission	13,881		5,402	8,479
	Total	26,514	21.4	10,777	15,737
Schizophrenia	1st Admission	5,565		3,239	2,326
	Readmission	15,840		8,900	6,940
	Total	21,405	17.3	12,139	9,266
Alcoholism	1st Admission	10,390		8,348	2,042
	Readmission	9,272		7,528	1,744
	Total	19,662	15.9	15,876	3,786
Personality disorders	1st Admission	4,719		2,743	1,976
	Readmission	4,948		2,709	2,239
	Total	9,667	7.8	5,452	4,215
Mental retardation	1st Admission	1,188		756	432
	Readmission	2,132		1,161	971
	Total	3,320	2.7	1,917	1,403
Others[3]	1st Admission	2,203		1,095	1,108
	Readmission	1,525		732	793
	Total	3,728	3.0	1,827	1,901
Total[3]	**1st Admission**	**59,732**		**30,607**	**29,125**
	Readmission	**64,232**		**32,194**	**32,038**
	Total	**123,964**	**100.1**	**62,801**	**61,163**

[1] Includes all mental hospitals and institutions as well as psychiatric units of general and allied special hospitals.
[2] Note that the grouping of causes may differ slightly from mental health statistics published elsewhere. Alcoholism includes alcoholic problems as well as alcoholic psychoses. Psychoses include organic as well as functional psychoses except schizophrenia. Neuroses include neurosis, psychophysiological disorders, transient situational disturbance as well as behaviour disorders of childhood. Personality disorders include personality disorders, sexual deviation, drug dependence and special symptoms.
[3] The numbers for the Others and Total categories do not agree with the figures published in "Mental Health Statistics, Vol. I", 1977, because epilepsy (code 345) and the "not stated" and "not elsewhere classified" diagnoses have been excluded from this table.
Source: Mental Health Statistics, Vol. 1, 1977. **Statistics Canada,** Catalogue 83-204.

TABLE 56. All Inpatient Facilities,[1] Distribution of Psychiatric Patient-days[2] by Major Causes and by Sex, Canada, 1977

Cause		Total (males and females) patient-days[3]	Percentage	Males patient-days[3]	Females patient-days[3]
Neuroses	General hospitals	679,476		210,457	469,019
	Mental institutions	518,748		280,408	238,340
	Total	1,198,224	24.3	490,865	707,359
Schizophrenia	General hospitals	411,022		215,365	195,657
	Mental institutions	690,382		418,176	272,206
	Total	1,101,404	22.4	633,541	467,863
Psychoses	General hospitals	660,413		247,784	412,629
	Mental institutions	438,699		194,015	244,684
	Total	1,099,112	22.3	441,799	657,313
Alcoholism	General hospitals	295,502		229,091	66,411
	Mental institutions	331,145		265,553	65,592
	Total	626,647	12.7	494,644	132,003
Mental retardation	General hospitals	52,454		26,730	25,724
	Mental institutions	276,694		156,501	120,193
	Total	329,148	6.7	183,231	145,917
Personality disorders	General hospitals	143,490		61,065	82,425
	Mental institutions	203,300		126,693	76,607
	Total	346,790	7.0	187,758	159,032
Others[4]	General hospitals	152,460		86,815	65,645
	Mental institutions	66,699		37,032	29,667
	Total	219,159	4.5	123,847	95,312
Not stated	General hospitals	-		-	-
	Mental institutions	5,328		3,773	1,555
	Total	5,328	0.1	3,773	1,555
ALL CAUSES	**GENERAL HOSPITALS**	**2,394,817**		**1,077,307**	**1,317,510**
	MENTAL INSTITUTIONS	**2,530,995**		**1,482,151**	**1,048,844**
	TOTAL	**4,925,812**	**100.0**	**2,559,458**	**2,366,354**

[1] Includes all psychiatric institutions as well as public psychiatric units and mentally ill patients in non-psychiatric wards in general and allied special hospitals.

[2] The calculation of patient-days differs between psychiatric institutions and general and allied special hospitals. For psychiatric institutions, only those days between January 1 and December 31, 1977 were counted. However for general and allied special hospitals, complete admission and/or separation dates are not provided to Statistics Canada by all provinces. Thus the patient-days represent the total days stay from the date of admission (whether prior to or during 1977) to the date of discharge. The vast majority of psychiatric patients in these general hospitals have a short length of stay (i.e., less than 3 weeks) so this "accumulated" count does not pose a problem for most diagnostic categories.

[3] Includes only days in inpatient facilities during the 1977 calendar year, for those patients who were separated (discharged) in 1977. That is patients who were still in the facilities (and therefore "on the books") at the end of the year are not included (see Table 42).

[4] Included as "Other diagnoses" are: 309 - Mental Disorders non-psychotic associated with physical conditions, in both general and allied special hospitals and psychiatric institutions, and 793 - Observation without further need for medical care, in psychiatric institutions only. In general hospitals almost all patient-days for Observation relate to physical problems. Epilepsy (345) is excluded entirely since many people regard this as a physical rather than mental condition.

Source: Special Tabulations, Institutional Care Section, Health Division, **Statistics Canada**, June 1980.

institutions. These data indicate that mental disorders, while not directly responsible for a large number of deaths, should be considered a priority for health promotion and prevention programs.

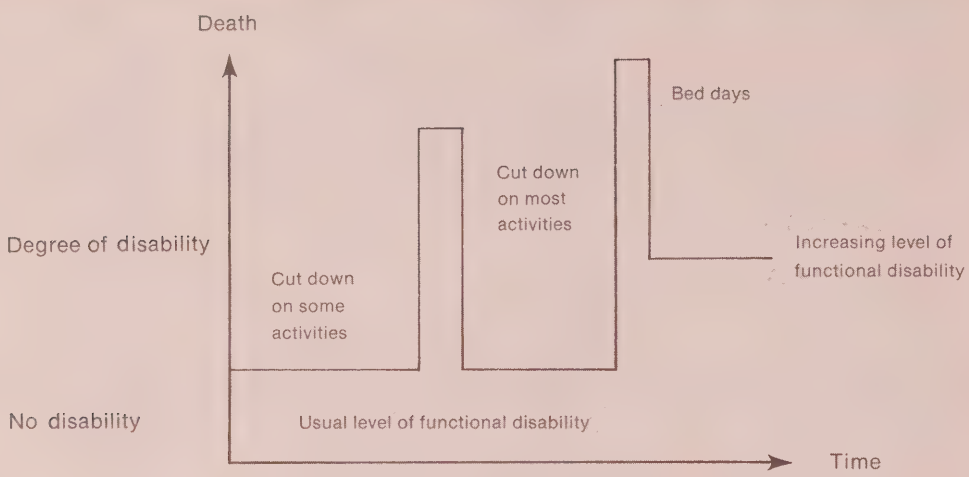
Population Based Health Status Measures

Health problems presented here differ from those described in sections on mortality and institutional morbidity; they are not clinical diagnoses but reports by individuals of how they view their illnesses. Disability as used here described the loss or reduction of functional ability and activity that is consequent to impairment.[17]

[17] The World Health Organization defines impairment as any disturbance of or interference with the normal structure and functioning of the body, including mental function. Handicap is defined as the social disadvantage consequent upon impairment and disability. For example, a missing leg would be an impairment, the inability to run, a disability; while being unable to work is a handicap. It should be noted that an impairment does not necessarily result in disability, nor does disability always cause a handicap. See **Philip Wood**, *Classification of Impairments and Handicaps*, Reviews/Conference Series No. 75/13, WHO, Geneva, 1975

Figure VII

Temporary Deviation from Usual Level of Functioning (Time-based Disability)



Disability can be of a long or short term nature. Long term disability is defined according to an individual's usual capacity to function while short term disability represents deviations from the usual level of functioning. Figure VII illustrates the difference.

Short Term Disability

Short term disability is measured in terms of disability days, the number of days during which an individual restricts his or her usual activities for all or most of the day for health reasons.[18] It can be thought of as acute illness; the major overall causes are influenza, acute respiratory disease and accidents. The estimates provided in Tables 57, 58 and 59 are the average number of days per person per year of short term disability.

[18] Disability days can be disaggregated into: (A) bed-days; (B) major activity-loss days (for those currently working, doing housework or attending school); (C) major activity-loss days which are also bed-days, and (D) cut-down days. By eliminating major activity-loss days which are also bed-days, an estimate of total disability days can be calculated, i.e., A+B+D-C. For further details see *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Appendix III.

Disability Days

Overall, data from the Canada Health Survey shows an average of 15.7 disability days per person in 1978-1979. Canadian figures are slightly lower than those for the United States for the same period, but this may be due to methodological differences.

For all age groups, women had higher rates of disability days than men. Not surprisingly, the number of disability days increased with age, with the elderly reporting an average of 35 disability days a year. Among the regions, the Prairies had the lowest rates of short term disability (14 days) and British Columbia had the highest (over 20 days). In part, this can be attributed to differences in the age structure.

The same age and sex trends that were seen for total disability days also apply to bed-days. Women average 6.2 bed-days, compared to 4.2 for men. Of all age and sex groups, women over 65 have by far the highest rate of bed-days (15.3).

TABLE 57. Population, Annual Disability Days and Annual Disability Days Per Person by Sex and Age, Canada and Regions, 1978-1979

	Total population			Annual disability days			Annual disability days per person		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
	in thousands								
All ages:									
Canada	**23,023**	**11,417**	**11,606**	**362,211**	**142,556**	**219,655**	**15.73**	**12.49**	**18.93**
Atlantic region	**2,191**	**1,092**	**1,098**	**38,148**	**15,023**	**23,125**	**17.41**	**13.75**	**21.06**
Quebec	**6,198**	**3,059**	**3,139**	**90,483**	**31,960**	**58,524**	**14.60**	**10.45**	**18.64**
Ontario	**8,336**	**4,121**	**4,215**	**129,009**	**53,284**	**75,725**	**15.48**	**12.93**	**17.96**
Prairie region	**3,820**	**1,914**	**1,905**	**53,587**	**22,479**	**31,108**	**14.03**	**11.74**	**16.33**
British Columbia	**2,479**	**1,230**	**1,248**	**50,984**	**19,809**	**31,175**	**20.57**	**16.10**	**24.97**
Less than 15:									
Canada	5,531	2,833	2,699	48,286	24,458	23,828	8.73	8.63	8.83
Atlantic region	605	311	294	5,248	2,603	2,645	8.67	8.37	8.99
Quebec	1,439	738	702	9,111	4,505	4,606	6.33	6.11	6.56
Ontario	1,964	1,006	958	16,234	9,117	7,117	8.27	9.06	7.43
Prairie region	963	492	471	11,600	5,546	6,054	12.05	11.27	12.86
British Columbia	560	286	274	6,094	2,688	3,406	10.88	9.40	12.42
15-64:									
Canada	15,473	7,697	7,775	243,251	91,332	151,919	15.72	11.87	19.54
Atlantic region	1,390	693	697	24,983	9,309	15,674	17.97	13.43	22.47
Quebec	4,268	2,111	2,156	63,968	20,641	43,327	14.99	9.78	20.09
Ontario	5,631	2,799	2,832	89,440	35,058	54,382	15.88	12.52	19.20
Prairie region	2,516	1,264	1,252	31,706	12,757	18,949	12.60	10.10	15.13
British Columbia	1,667	830	837	33,155	13,568	19,587	19.89	16.34	23.41
65 and over:									
Canada	2,019	887	1,132	70,675	26,766	43,908	35.00	30.19	38.78
Atlantic region	195	88	106	7,918	3,112	4,806	40.65	35.23	45.15
Quebec	491	210	281	17,405	6,815	10,590	35.46	32.48	37.68
Ontario	741	316	426	23,335	9,109	14,226	31.48	28.86	33.43
Prairie region	341	159	182	10,281	4,177	6,104	30.16	26.29	33.54
British Columbia	251	114	137	11,735	3,553	8,182	46.70	31.16	59.60

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 64.

TABLE 58. Total Population, by Annual Bed-days and Annual Bed-days Per Person, by Age and Sex, Canada, 1978-1979

	Total population	Annual bed-days	Annual bed-days per person
	in thousands		
All ages:			
Both sexes	**23,023**	**121,071**	**5.26**
Male	**11,417**	**48,381**	**4.24**
Female	**11,606**	**72,690**	**6.26**
Less than 15:			
Total	5,531	20,007	3.62
Male	2,833	9,998	3.53
Female	2,699	10,009	3.71
15-64:			
Total	15,473	74,408	4.81
Male	7,697	29,027	3.77
Female	7,775	45,381	5.84
65 and over:			
Total	2,019	26,656	13.20
Male	887	9,355	10.55
Female	1,132	17,300	15.28

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 61.

TABLE 59. Population, Annual Major Activity-loss Days and Annual Major Activity-loss Days Per Person, by Age, Major Activity and Sex, Canada, 1978-1979

Major activity	Total population	Annual major activity-loss days	Annual major activity-loss days per person
	in thousands		
All ages:			
Total	**16,652**	**114,165**	**6.86**
Male	**7,683**	**30,977**	**4.03**
Female	**8,968**	**83,188**	**9.28**
Working:			
Total	**8,669**	**37,313**	**4.30**
Male	**5,664**	**20,044**	**3.54**
Female	**3,005**	**17,269**	**5.75**
Housework:			
Total	**4,141**	**53,178**	**12.84**
Male	**31**	**--**	**--**
Female	**4,110**	**52,572**	**12.79**
School:			
Total	**3,841**	**23,674**	**6.16**
Male	**1,988**	**10,327**	**5.19**
Female	**1,853**	**13,348**	**7.20**
Less than 15:			
Total	2,365	15,377	6.50
Male	1,201	6,077	5.06
Female	1,164	9,300	7.99
School:			
Total	2,361	15,377	6.51
Male	1,198	6,077	5.07
Female	1,164	9,300	7.99
15-64:			
Total	13,454	86,387	6.42
Male	6,379	23,849	3.74
Female	7,076	62,538	8.84
Working:			
Total	3,545	36,211	4.24
Male	5,562	18,993	3.41
Female	2,982	17,218	5.77
Housework:			
Total	3,431	41,879	12.20
Male	27	--	--
Female	3,404	41,273	12.12
School:			
Total	1,478	8,297	5.61
Male	789	4,250	5.38
Female	689	4,047	5.87
65 and over:			
Total	832	12,401	14.91
Male	104	1,051	10.13
Female	728	11,350	15.59
Working:			
Total	120	1,102	9.15
Male	99	--	--
Female	22	--	--
Housework:			
Total	710	11,299	15.92
Male	4	--	--
Female	706	11,299	16.00
School:			
Total	1	-	-
Male	1	-	-
Female	-	-	-

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 62.

Major Activity Loss Days

Major activity loss days are days lost from work, school and housework because of ill-health. The affected population includes only persons for whom work, school or housework is the major activity. Thus pre-school children, the retired and unemployed are excluded.

It is perhaps more interesting to examine the total number of days rather than the average. More than 114 million major activity-loss days were reported including 53 million lost from housework, 37 million from work, and 24 million from school. In comparison, the total number of days lost from work because of strikes was 7.4 million days in 1978.[19]

Although strikes are potentially more disruptive because of widespread interruptions in service, ill-health clearly takes its toll, being responsible for five times more days lost from work. Approximately one-third of the days lost from work are due to occupational health problems insured by Worker's Compensation.[20]

Long Term Disability

Long term disability is measured in terms of activity limitation, i.e., the degree to which an individual is limited in the kind or amount of activity he or she can carry out. Nearly 12% of the population experienced some limitation because of health. Nearly half a million Canadians (2%), were so severely disabled that they could not carry out a major activity. Over 300,000 of these were of prime working age, between 15 and 64 years (Table 60). These figures exclude the disabled in institutions such as nursing homes; it has been estimated that there are about 275,000 in this group.[21] The major causes of long term disability are limb and joint disorders (19.4%), heart disease (13.1%) and arthritis (10.4%) followed by trauma and mental disorders.

Health Problems

Impairments or health problems do not necessarily result in disability. In dealing with many health problems, individuals may consult a physician or take drugs. In situations where, for example, individuals have allergies which are not active all the time, there may not be a specific action taken to relieve the problem; in these cases, the health problems would not have been identified at the time the Canada Health Survey was conducted.

Over 25 million health problems were reported for 1978-1979 or an average of 1.1 problems per Canadian. As shown in Table 61, over half the population reported at least one health problem. As with disability, more health problems were reported for the older groups. Proportionally more women than men reported multiple problems (32% and 23%).

Health problems reported are classified according to the International Classification of Disease (9th revision). A condensed list suitable for analytical purposes is presented in Tables 62 and 63.[22] Since these problems are based on self-reported (and perceived) information and not clinical diagnoses, comparisons between these data and those derived from mortality and hospital morbidity records must be interpreted cautiously. Nevertheless, it can be seen that differences exist between the causes associated with the more traditional measures of health status and those shown here. The five leading health problems in the population were arthritis and rheumatism, limb and joint disorders, hay fever and other allergies, skin disorders and dental trouble. Heart disease, the leading cause of death, and hospitalization ranked eleventh in terms of self-reported health problems. Cancer, the second major cause of death, was not prevalent enough even to warrant being on the list of self-reported problems. Clearly, the health problems experienced by the population at large are quite different from those which cause hospitalization and death.

As shown in Figure VIII and Table 62, health problems vary by age and sex. The leading causes for men were limb and joint disorders, hay fever and other allergies, arthritis and rheumatism, while the leading causes for women were arthritis and rheumatism, skin disorders and hay fever and other allergies.

Table 63 shows which of these health behaviours were associated with health problems. Some health problems (3.g., acute respiratory disease, trauma and mental disorders) nearly always have an associated health behaviour, while others, such as hay fever, sight and hearing disorders, and dental trouble are less likely to have such an association.

Additional detail on drug use and on consultations is provided in Chapter II and in Chapter IV. At the time of the Canada Health Survey, 48% of the population reported using drugs in the previous two days, while 22% consulted a health professional in the previous two weeks.

Consultations and drug use can take place whether or not there is a health problem. Table 64 shows the proportion of people reporting health behaviours whether or not a health problem existed. The 15% of the population who reported a health behaviour, but no problem, might be regarded as hypochondriacs. On the other hand, these individuals might have participated in preventive health practices such as a regular medical check-up. The 11% reporting a problem and no health behaviour indicates that the problem was not serious or was under control.

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[19] Labour Canada, data published in the *Canadian Statistical Review*, May 1981 (**Statistics Canada,** Catalogue 11-003).

[20] These data are not available from Canada Health Survey. Days missed from work in 1978 insured by Worker's Compensation are published in *Canadian Employment Injuries and Occupational Illnesses,* **Labour Canada,** 1979 Edition.

[21] *Composite Picture of Disabled,* **McWhinnie and Walker,** National Health and Welfare Canada, 1980.

[22] See "Distribution of Conditions" in this Chapter for more details.

TABLE 60. Population by Age and Sex, by Major Activity and Activity Limitation, Canada, 1978-1979[1]

Activity limitation		Age groups											
		All ages			Less than 15 years			15-64 years			65 years and over		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		in thousands											
Major activity:													
Total	No.	**23,023**	**11,417**	**11,606**	**5,531**	**2,833**	**2,699**	**15,473**	**7,697**	**7,775**	**2,019**	**887**	**1,132**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
No limitation	No.	**20,358**	**10,167**	**10,190**	**5,376**	**2,736**	**2,639**	**13,734**	**6,882**	**6,852**	**1,248**	**549**	**699**
	%	**88.4**	**89.1**	**87.8**	**97.2**	**96.6**	**97.8**	**88.8**	**89.4**	**88.1**	**61.8**	**61.9**	**61.7**
Some limitation	No.	**509**	**208**	**300**	**50**	**30**	**21**	**393**	**160**	**233**	**65**	**19**	**46**
	%	**2.2**	**1.8**	**2.6**	**0.9**	**1.1**	**0.8**	**2.5**	**2.1**	**3.0**	**3.2**	**2.1**	**4.1**
Major activity limited	No.	**1,670**	**690**	**981**	**105**	**67**	**39**	**1,035**	**426**	**610**	**530**	**198**	**332**
	%	**7.3**	**6.0**	**8.4**	**1.9**	**2.4**	**1.4**	**6.7**	**5.5**	**7.8**	**26.2**	**22.3**	**29.3**
Cannot do major activity	No.	**486**	**351**	**135**	--	-	--	**310**	**230**	**80**	**177**	**122**	**55**
	%	**2.1**	**3.1**	**1.2**	--	-	--	**2.0**	**3.0**	**1.0**	**8.7**	**13.7**	**4.9**
Working:													
Total	No.	9,114	6,032	3,082	-	-	-	8,968	5,913	3,055	146	119	27
	%	39.6	52.8	26.6	-	-	-	58.0	76.8	39.3	7.2	13.4	2.4
No limitation	No.	8,374	5,518	2,856	-	-	-	8,264	5,429	2,835	110	89	21
	%	36.4	48.3	24.6	-	-	-	53.4	70.5	36.5	5.4	10.1	1.8
Some limitation	No.	211	137	73	-	-	-	205	132	72	--	--	1
	%	0.9	1.2	0.6	-	-	-	1.3	1.7	0.9	--	--	0.1
Major activity limited	No.	529	376	153	-	-	-	499	352	148	30	24	--
	%	2.3	3.3	1.3	-	-	-	3.2	4.6	1.9	1.5	2.8	--
Housework:													
Total	No.	4,182	23	4,160	-	-	-	3,455	17	3,438	727	--	722
	%	18.2	0.2	35.8	-	-	-	22.3	0.2	44.2	36.0	--	63.8
No limitation	No.	3,379	20	3,359	-	-	-	2,896	--	2,881	482	--	478
	%	14.7	0.2	28.9	-	-	-	18.7	--	37.1	23.9	--	42.2
Some limitation	No.	169	-	169	-	-	-	133	-	133	36	-	36
	%	0.7	-	1.5	-	-	-	0.9	-	1.7	1.8	-	3.2
Major activity limited	No.	635	--	632	-	-	-	426	--	424	209	--	208
	%	2.8	--	5.4	-	-	-	2.8	--	5.5	10.3	--	18.4
School:													
Total	No.	5,633	2,904	2,730	3,448	1,759	1,689	2,185	1,145	1,041	-	-	-
	%	24.5	25.4	23.5	62.3	62.1	62.6	14.1	14.9	13.4	-	-	-
No limitation	No.	5,433	2,796	2,637	3,328	1,684	1,643	2,105	1,111	994	-	-	-
	%	23.6	24.5	22.7	60.2	59.5	60.9	13.6	14.4	12.8	-	-	-
Some limitation	No.	90	46	44	44	26	18	45	20	26	-	-	-
	%	0.4	0.4	0.4	0.8	0.9	0.7	0.3	0.3	0.3	-	-	-
Major activity limited	No.	111	62	49	76	48	28	35	--	21	-	-	-
	%	0.5	0.5	0.4	1.4	1.7	1.0	0.2	--	0.3	-	-	-
Inactive/Health:													
Total	No.	486	351	135	--	-	--	310	230	80	177	122	55
	%	2.1	3.1	1.2	--	-	--	2.0	3.0	1.0	8.7	13.7	4.9
Cannot do major activity	No.	486	351	135	--	-	--	310	230	80	177	122	55
	%	2.1	3.1	1.2	--	-	--	2.0	3.0	1.0	8.7	13.7	4.9
Inactive/Other:													
Total	No.	1,535	1,042	493	--	--	--	554	392	162	970	641	328
	%	6.7	9.1	4.2	--	--	--	3.6	5.1	2.1	48.0	72.3	29.0
No limitation	No.	1,136	790	345	--	--	--	468	326	142	656	455	201
	%	4.9	6.9	3.0	--	--	--	3.0	4.2	1.8	32.5	51.4	17.7
Some limitation	No.	33	21	12	-	-	-	--	--	--	22	--	--
	%	0.1	0.2	0.1	-	-	-	--	--	--	1.1	--	--
Major activity limited	No.	367	231	136	--	-	--	75	58	17	291	173	119
	%	1.6	2.0	1.2	--	-	--	0.5	0.8	0.2	14.4	19.5	10.5
Baby/Child:													
Total	No.	2,072	1,066	1,006	2,072	1,066	1,006	-	-	-	-	-	-
	%	9.0	9.3	8.7	37.5	37.6	37.3	-	-	-	-	-	-
No limitation	No.	2,037	1,044	993	2,037	1,044	993	-	-	-	-	-	-
	%	8.8	9.1	8.6	36.8	36.8	36.8	-	-	-	-	-	-
Some limitation	No.	--	--	--	--	--	--	-	-	-	-	-	-
	%	--	--	--	--	--	--	-	-	-	-	-	-
Major activity limited	No.	29	18	--	29	18	--	-	-	-	-	-	-
	%	0.1	0.2	--	0.5	0.6	--	-	-	-	-	-	-

[1] Refers to the previous 12 months for both major activity and activity limitation.

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 67.

TABLE 61. Proportion of Population with at Least One Health Problem, by Sex and Age Group, Canada, 1978-1979

	All ages	Less than 15 years	15-64 years	65 years and over
	per cent			
Both sexes	54.3	34.9	57.2	85.6
Male	50.0	35.5	51.6	83.7
Female	58.6	34.2	62.8	87.2

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* adapted from Table 57.

Distribution of Conditions

Health Problems[23]

Health problems were coded by experienced coders according to the ninth revision of the International Classification of Diseases (ICD-9) at the four-digit level, and later collapsed into 22 groupings appropriate to the survey data. The resulting data presented in this chapter refer to conditions perceived by individual respondents rather than those diagnosed by objective examination. In fact, the health problems reported varied from symptomatic complaints to reports of very detailed diagnoses, making it difficult to code problems within an established classification system such as the ICD-9. For example, the category "mental disorders" includes symptoms such as depression or insomnia, along with specific conditions such as schizophrenia. The resulting list of conditions, along with the relevant ICD-9 codes and the percentage distribution for those reported in the survey, are shown in the following table.

Statistics on Selected Diseases

Notifiable diseases[24] are communicable diseases which physicians are required to report by law so that public health officials are aware of possible epidemics and may determine the effectiveness of public health programs such as immunization. These data are limited; they represent cases and not individuals; they do not include the impact on an individual, except for the mortality figures; and reporting practices vary from physician to physician and province to province. Nevertheless the information does present another dimension of health status.

The five most frequently reported diseases are venereal diseases, measles, salmonella, tuberculosis and hepatitis. The seven notifiable diseases responsible for the largest number of deaths are tuberculosis, infectious hepatitis, meningococcal infections, diarrhoea of the newborn, venereal diseases, measles and salmonella. These are shown in Tables 65 and 66 for 1924-1979. These diseases represent over 90% of all cases of notifiable diseases reported in 1978, and were responsible for 96% of deaths due to notifiable diseases.

The increase in venereal diseases is cause for concern. Venereal disease rates have remained high in recent years at over 200 cases per 100,000 people, twice the rate of the 1950s and 1960s. Deaths due to venereal diseases, however, have declined steadily since the introduction of antibiotics after World War II. Not included in these figures, but also of concern to public health officials, is the spread of Herpes II virus.

Deaths from notifiable diseases have decreased as a proportion of all deaths, dropping from 0.8% in 1959 to 0.6% in 1978. This indicates, in part, the effectiveness of public health programs in treating and controlling communicable diseases.

The decline in both the incidence and number of deaths associated with tuberculosis in the last 50 years is one of the success stories of public health. Yet, tuberculosis is still the leading cause of death among the notifiable diseases.

[23] Taken directly from *The Health of Canadians: Report of the Canada Health Survey*, op. cit., pp. 109-110.

[24] See table below for the ICD groupings used over the years 1924-1979 for the major communicable diseases.

ICD Codes Used in the Classification of Major Communicable Diseases, Canada, 1924-1979

Diseases	Years	ICD Codes	Years	ICDA Codes
Tuberculosis	1924-1968	(001-019)	1969-1979	(010, 011, 012-019)
Infectious hepatitis	" "	(092)	" "	(070-999.2)
Meningococcal infections	" "	(057)	" "	(036)
Venereal diseases	" "	(020-038) (Excl. 021.4, 022, 025, 035)	" "	(090-099.2)
—Gonococcal infections	" "	(030-034)	" "	(098)
—Syphilis	" "	(020-021.3, 023, 024, 026-029)	" "	(090-097)
—Other	" "	(029)	" "	(099.0, 099.1, 099.2)
Diarrhoea of newborn, epidemic	" "	(764)	" "	(009.1)
Salmonella infections (N/A 1924-56)	1961-1966	(042.1)	" "	(003.0, 003.9)
Measles	1924-1958	(085)	" "	(055)
Streptococcal sore throat and scarlet fever	1924-1968	(050, 051)	" "	(034)

Distribution of Conditions

CHS condition	ICD-9 codes	Percentage
TOTAL (ALL CONDITIONS)	**000.0-999.9**	**100.0**
1. Mental disorders	290.0-307.7, 307.9-316.0, 780.5,799.2	3.9
2. Diabetes	250.0-250.9	1.5
3. Thyroid disorders	240.0-246.9	1.2
4. Anemia	280.0-285.9	1.6
5. Headache	307.8, 346.0-346.9, 784.0	4.3
6. Sight disorders	360.0-379.9, V41.0,V41.1	4.7
7. Hearing disorders	380.0-389.9, V41.2,V41.3	4.0
8. Hypertension	401.0-405.9	6.1
9. Heart disease	391.0-392.0, 393.0-398.9, 410.0-429.9, 746.9,785.0-785.2	3.3
10. Acute respiratory ailments	460.0-466.1, 480.0-486.0	3.1
11. Influenza	487.0-487.8	2.7
12. Bronchitis and emphysema	490.0-492.0	2.2
13. Asthma	493.0-493.9	2.1
14. Hayfever and other allergies	477.0-477.9, 995.2,995.3	8.5
15. Dental trouble	520.0-525.9, V52.3,V53.4	6.6
16. Gastric and duodenal ulcers	531.0-533.9	1.9
17. Functional digestive disorders	009.0-009.3, 536.0-564.9, 787.1,787.3	2.7
18. Skin allergies and other skin disorders	680.0-709.9, 782.1	8.1
19. Arthritis and rheumatism	729.0	9.6
20. Back, limb and joint disorders	710.0-728.9, 729.1-739.9, 754.2-756.5, V43.6,V49.9	9.1
21. Trauma (accidents and injury)	800.0-995.1, 995.4-999.9	2.4
22. Other	All codes not listed above	10.4

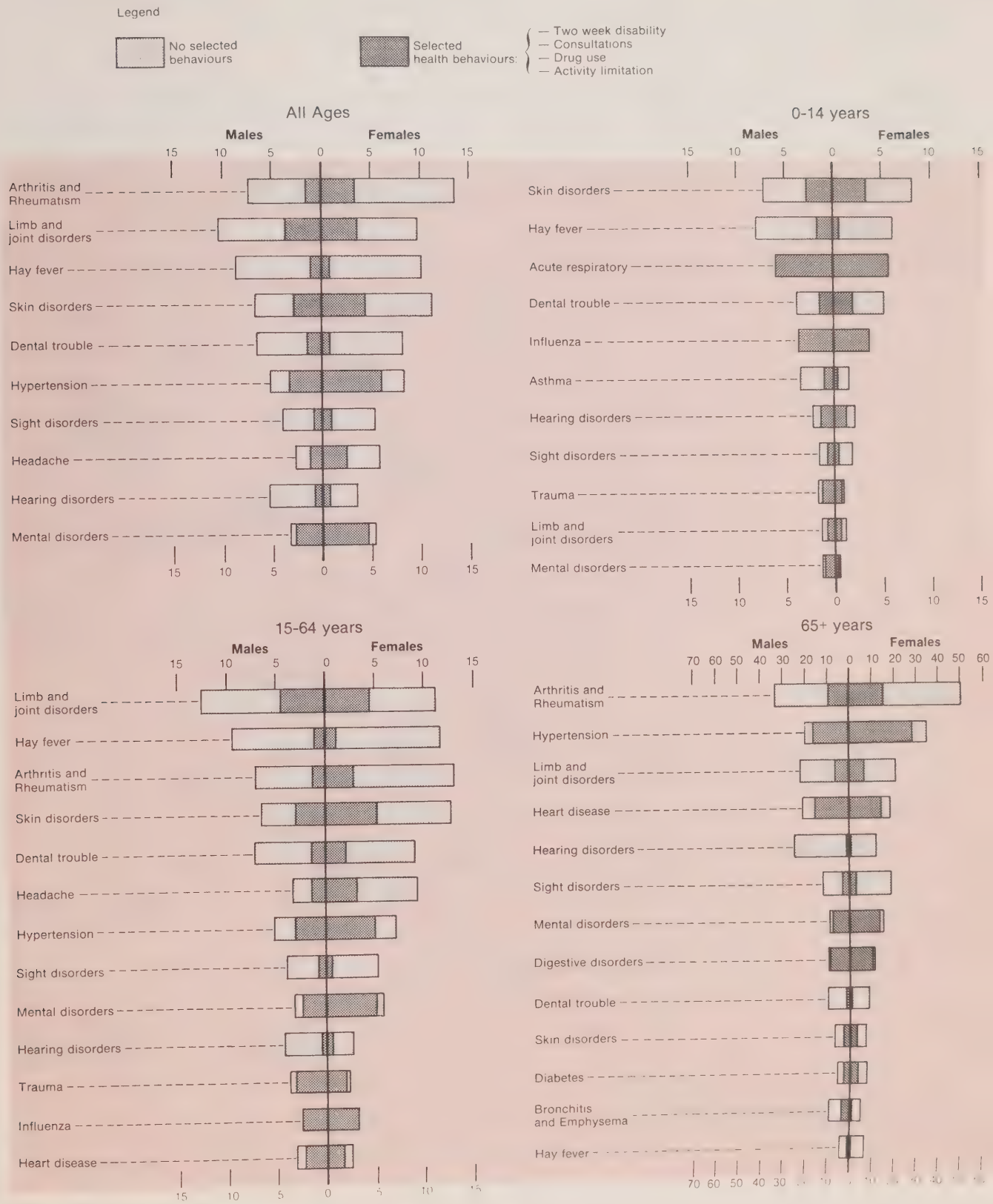
TABLE 62. Prevalence of Health Problems by Age and Sex, by Type of Health Problem, Canada, 1978-1979[1]

Type of health problem		All ages			Less than 15 years			15-64 years			65 years and over		
		Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		in thousands											
Total population[2]	No.	**23,023**	**11,417**	**11,606**	**5,531**	**2,833**	**2,699**	**15,473**	**7,697**	**7,775**	**2,019**	**887**	**1,132**
	%	**100.0**	**49.6**	**50.4**	**24.0**	**12.3**	**11.7**	**67.2**	**33.4**	**33.8**	**8.8**	**3.9**	**4.9**
At least one problem	No.	12,510	5,714	6,796	1,928	1,005	924	8,853	3,968	4,885	1,729	742	987
	%	100.0	45.7	54.3	15.4	8.0	7.4	70.8	31.7	39.0	13.8	5.9	7.9
No problem	No.	10,513	5,703	4,811	3,603	1,828	1,775	6,620	3,730	2,890	290	145	146
	%	100.0	54.2	45.8	34.3	17.4	16.9	63.0	35.5	27.5	2.8	1.4	1.4
Health problems:													
Total problems	No.	**25,526**	**10,559**	**14,967**	**2,634**	**1,385**	**1,249**	**17,692**	**7,177**	**10,515**	**5,200**	**1,997**	**3,203**
	%	**100.0**	**41.4**	**58.6**	**10.3**	**5.4**	**4.9**	**69.3**	**28.1**	**41.2**	**20.4**	**7.8**	**12.5**
Mental disorders	No.	1,000	363	637	53	39	14	697	249	448	249	75	174
	%	100.0	36.3	63.7	5.4	3.9	1.4	69.7	24.9	44.9	24.9	7.5	17.4
Diabetes	No.	379	149	230	--	--	--	237	102	135	135	45	90
	%	100.0	39.2	60.8	2.2	2.2	2.0	62.5	27.0	35.5	35.6	11.8	23.8
Thyroid disorders	No.	297	41	256	--	--	-	230	24	206	65	15	51
	%	100.0	13.7	86.3	--	--	-	77.4	8.1	69.3	22.0	5.0	17.0
Anemia	No.	417	52	366	33	--	16	307	24	283	77	11	66
	%	100.0	12.4	87.6	8.0	--	3.9	73.6	5.6	67.9	18.4	2.7	15.8
Headache	No.	1,102	292	809	40	19	21	984	253	732	77	21	57
	%	100.0	26.5	73.5	3.6	1.7	1.9	89.3	22.9	66.4	7.0	1.9	5.1
Sight disorders	No.	1,200	449	750	96	45	51	786	304	482	318	100	217
	%	100.0	37.5	62.5	8.0	3.7	4.3	65.5	25.4	40.1	26.5	8.4	18.1
Hearing disorders	No.	1,028	607	422	127	66	62	549	327	222	352	214	138
	%	100.0	59.0	41.0	12.4	6.4	6.0	53.4	31.8	21.6	34.2	20.8	13.4
Hypertension	No.	1,551	588	963	--	--	--	970	411	559	579	176	403
	%	100.0	37.9	62.1	--	--	--	62.6	26.5	36.1	37.4	11.4	26.0
Heart disease	No.	847	429	418	--	--	7	436	237	199	394	182	212
	%	100.0	50.6	49.4	--	--	0.8	51.5	28.0	23.5	46.5	21.5	25.0
Acute respiratory	No.	781	355	426	320	164	156	428	177	251	33	14	19
	%	100.0	45.4	54.6	41.0	21.0	20.0	54.8	22.6	32.1	4.2	1.8	2.4
Influenza	No.	680	296	384	204	100	104	441	189	252	35	7	27
	%	100.0	43.6	56.4	30.0	14.7	15.3	64.8	27.8	37.1	5.1	1.1	4.0
Bronchitis and emphysema	No.	562	279	283	70	42	27	364	158	207	128	79	49
	%	100.0	49.6	50.4	12.4	7.5	4.9	64.8	28.1	36.7	22.8	14.0	8.8
Asthma	No.	547	290	257	141	97	44	327	148	179	79	45	34
	%	100.0	53.1	46.9	25.7	17.7	8.1	59.8	27.1	32.7	14.5	8.3	6.2
Hay fever	No.	2,157	987	1,170	390	222	168	1,650	729	921	117	36	81
	%	100.0	45.8	54.2	18.1	10.3	7.8	76.5	33.8	42.7	5.4	1.7	3.7
Dental problems	No.	1,697	739	958	246	104	142	1,267	552	715	184	83	101
	%	100.0	43.6	56.4	14.5	6.2	8.3	74.7	32.5	42.1	10.8	4.9	5.9
Gastric and duodenal ulcers	No.	482	282	199	--	--	--	398	232	166	79	46	33
	%	100.0	58.6	41.4	--	--	--	82.6	48.2	34.5	16.3	9.6	6.8
Digestive disorders	No.	687	286	401	45	26	19	434	178	256	209	83	126
	%	100.0	41.7	58.3	6.5	3.7	2.8	63.1	25.9	37.2	30.4	12.0	18.4
Skin disorders	No.	2,064	756	1,308	426	202	224	1,495	497	998	143	57	86
	%	100.0	36.6	63.4	20.6	9.8	10.9	72.4	24.1	48.4	6.9	2.8	4.2
Arthritis and rheumatism	No.	2,440	844	1,596	13	6	--	1,571	550	1,021	856	288	568
	%	100.0	34.6	65.4	0.5	0.2	--	64.4	22.5	41.8	35.1	11.8	23.3
Limb and joint disorders	No.	2,334	1,182	1,153	70	39	31	1,833	952	881	432	192	240
	%	100.0	50.6	49.4	3.0	1.7	1.3	78.5	40.8	37.8	18.5	8.2	10.3
Trauma	No.	616	349	268	73	46	27	471	281	190	72	22	51
	%	100.0	56.6	43.4	11.8	7.5	4.3	76.4	45.6	30.8	11.8	3.5	8.2
Other	No.	2,660	945	1,715	254	134	121	1,818	605	1,213	588	207	381
	%	100.0	35.5	64.5	9.6	5.0	4.5	68.4	22.7	45.6	22.1	7.8	14.3

[1] "Prevalence" refers to existing conditions reported at the time of the interview and therefore includes both acute and chronic conditions.
[2] The top portion of the table shows the proportion of the population experiencing health problems while the bottom shows the number of health problems reported, classified by type of problem.
Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 57.

Figure VIII

Prevalence of Health Problems per 100 Persons by Selected Health Behaviours and Sex, for Selected Age Groups, Canada, 1978-79



Source: The Health of Canadians: Report of the Canada Health Survey. Figure VI

TABLE 63. Prevalence of Health Problems by Selected Health Behaviours by Type of Health Problem, Canada, 1978-1979[1]

Type of health problem		Total population			Disability days		Consultations		Drug use		Activity limitation		None of these	
		Both sexes	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
		in thousands												
Total population[2]	No.	**23,023**	**11,417**	**11,606**	**1,111**	**1,654**	**2,086**	**3,031**	**4,658**	**6,363**	**1,250**	**1,416**	**5,405**	**3,989**
	%	**100.0**	**49.6**	**50.4**	**4.8**	**7.2**	**9.1**	**13.2**	**20.2**	**27.6**	**5.4**	**6.2**	**23.5**	**17.3**
At least one problem	No.	12,510	5,714	6,796	1,110	1,647	1,723	2,556	3,254	4,776	1,250	1,416	1,359	1,049
	%	100.0	45.7	54.3	8.9	13.2	13.8	20.4	26.0	38.2	10.0	11.3	10.9	8.4
No problem	No.	10,513	5,703	4,811	--	--	363	475	1,404	1,587	-	-	4,046	2,940
	%	100.0	54.2	45.8	--	--	3.5	4.5	13.4	15.1	-	-	38.5	28.0
Health problems:														
Total problems	No.	**25,526**	**10,559**	**14,967**	**1,115**	**1,671**	**1,390**	**1,964**	**2,474**	**4,299**	**1,247**	**1,415**	**5,724**	**7,702**
	%	**100.0**	**41.4**	**58.6**	**4.4**	**6.5**	**5.4**	**7.7**	**9.7**	**16.8**	**4.9**	**5.5**	**22.4**	**30.2**
Mental disorders	No.	1,000	363	637	10	53	43	72	235	501	49	77	70	74
	%	100.0	36.3	63.7	1.0	5.3	4.4	7.2	23.5	50.1	4.9	7.7	7.1	7.4
Diabetes	No.	379	149	230	--	--	--	18	59	104	15	25	79	107
	%	100.0	39.2	60.8	--	--	--	4.8	15.6	27.3	3.9	6.7	20.9	28.3
Thyroid disorders	No.	297	41	256	-	--	-	14	20	119	1	--	21	129
	%	100.0	13.7	86.3	-	--	-	4.8	6.8	40.2	0.2	--	6.9	43.3
Anemia	No.	417	52	366	-	--	--	17	11	120	--	13	37	226
	%	100.0	12.4	87.6	-	--	--	4.2	2.8	28.7	--	3.2	8.9	54.1
Headache	No.	1,102	292	809	18	71	15	31	106	232	--	11	162	516
	%	100.0	26.5	73.5	1.6	6.4	1.3	2.8	9.6	21.1	--	1.0	14.7	46.9
Sight disorders	No.	1,200	449	750	--	--	42	48	20	27	34	38	360	646
	%	100.0	37.5	62.5	--	--	3.5	4.0	1.7	2.2	2.9	3.1	30.0	53.8
Hearing disorders	No.	1,028	607	422	24	28	48	56	22	16	18	16	527	335
	%	100.0	59.0	41.0	2.4	2.7	4.6	5.5	2.1	1.6	1.7	1.5	51.2	32.6
Hypertension	No.	1,551	588	963	--	32	--	90	355	683	30	46	214	254
	%	100.0	37.9	62.1	--	2.0	--	5.8	22.9	44.1	1.9	3.0	13.8	16.4
Heart disease	No.	847	429	418	55	50	52	42	240	234	207	141	120	125
	%	100.0	50.6	49.4	6.5	5.9	6.1	5.0	28.4	27.7	24.5	16.7	14.1	14.8
Acute respiratory	No.	781	355	426	238	257	106	168	93	117	--	--	-	-
	%	100.0	45.4	54.6	30.5	33.0	13.6	21.5	11.9	15.0	--	--	-	-
Influenza	No.	680	296	384	250	326	90	112	30	69	--	--	-	-
	%	100.0	43.6	56.4	36.8	48.0	13.2	16.5	4.4	10.1	--	--	-	-
Bronchitis and emphysema	No.	562	279	283	23	18	16	22	40	25	39	16	205	230
	%	100.0	49.6	50.4	4.1	3.1	2.9	3.9	7.2	4.4	7.0	2.9	36.5	40.9
Asthma	No.	547	290	257	11	20	14	17	40	56	51	46	206	177
	%	100.0	53.1	46.9	2.1	3.6	2.6	3.1	7.4	10.2	9.3	8.4	37.7	32.3
Hay fever	No.	2,157	987	1,170	5	12	67	54	46	48	19	9	862	1,064
	%	100.0	45.8	54.2	0.2	0.5	3.1	2.5	2.1	2.2	0.9	0.4	40.0	49.3
Dental problems	No.	1,697	739	958	18	25	143	213	14	13	-	-	577	730
	%	100.0	43.6	56.4	1.0	1.5	8.4	12.6	0.8	0.8	-	-	34.0	43.0
Gastric and duodenal ulcers	No.	482	282	199	--	14	--	10	69	58	12	--	193	131
	%	100.0	58.6	41.4	--	2.9	--	2.1	14.3	12.1	2.5	--	40.0	27.1
Digestive disorders	No.	687	286	401	43	62	47	47	198	305	31	16	--	18
	%	100.0	41.7	58.3	6.3	9.0	6.9	6.8	28.8	44.4	4.5	2.4	--	2.6
Skin disorders	No.	2,064	756	1,308	--	17	45	100	292	460	--	--	430	774
	%	100.0	36.6	63.4	--	0.8	2.2	4.9	14.1	22.3	--	--	20.8	37.5
Arthritis and rheumatism	No.	2,440	844	1,596	22	69	22	44	126	303	89	189	664	1,187
	%	100.0	34.6	65.4	0.9	2.8	0.9	1.8	5.2	12.4	3.7	7.7	27.2	48.7
Limb and joint disorders	No.	2,334	1,182	1,153	69	88	139	156	77	104	258	258	770	696
	%	100.0	50.6	49.4	3.0	3.8	6.0	6.7	3.3	4.5	11.0	11.0	33.0	29.8
Trauma	No.	616	349	268	111	90	172	122	33	32	117	98	52	39
	%	100.0	56.6	43.4	17.9	14.6	28.0	19.8	5.3	5.2	19.0	15.9	8.5	6.3
Other	No.	2,660	945	1,715	160	413	253	510	347	674	248	395	163	246
	%	100.0	35.5	64.5	6.0	15.5	9.5	19.2	13.0	25.4	9.3	14.9	6.1	9.2

[1] "Prevalence" refers to existing conditions reported at the time of the interview and therefore includes both acute and chronic conditions.
[2] The top portion of the table shows the proportion of the population experiencing health problems while the bottom shows the number of health problems reported, classified by type of problem.
Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 60.

TABLE 64. Relationship of Health Problems to Health Behaviours, Canada, 1978-1979

Health problem reported[2]	Selected health behaviours[1]		
	Yes	No	Total
Yes	43.9	10.5	54.3
No	15.3	30.3	45.7
Total	59.2	40.8	100.0

[1] Selected health behaviours include disability days, consultations with a health professional, drug use and activity limitation.
[2] For disability days and activity limitation the associated health problem had to be reported. For consultations and drug use, it was possible that there be no health problem, e.g., for a routine check-up or taking vitamins.
Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Text Table VII.

TABLE 65. Rates of Selected Notifiable Diseases per 100,000 Population, Canada, 1924-1979

Disease	1924	1931	1936	1941	1946	1951	1956	1961	1966	1971	1972	1973	1974	1975	1976	1977	1978	1979
Tuberculosis	44.0	69.4	79.2	87.5	116.6	74.3	49.4	32.7	22.5	18.2	17.9	16.1	14.9	13.5	11.4	13.7	12.4	11.8
Infectious hepatitis	-	1.1	1.1	1.3	5.1	4.6	18.3	67.5	29.4	40.5	35.8	32.4	25.6	19.9	18.3	20.8	15.2	7.1
Meningococcal infections	1.6	1.7	1.3	12.8	2.1	2.1	1.8	0.7	0.4	1.0	1.7	2.0	1.6	1.2	1.1	1.0	1.5	1.3
Venereal diseases	50.4	81.9	70.2	155.3	338.7	135.4	103.6	102.9	117.2	170.2	204.0	222.2	229.3	240.2	247.4	233.1	221.7	231.5
—Gonococcal infections	24.6	46.6	40.7	68.2	214.3	102.5	90.6	90.2	107.3	158.7	189.9	205.2	212.4	222.6	229.5	220.0	209.3	219.0
—Syphilis	24.8	35.1	29.6	84.6	124.0	32.7	13.0	12.7	9.8	11.5	14.0	17.0	16.8	17.4	17.4	12.9	12.3	12.5
—Other	0.3	0.1	-	-	0.5	0.2	0.1	-	-	-	-	-	0.1	0.2	0.6	0.2	0.1	--
Diarrhoea of newborn, epidemic	-	-	-	1.4	3.1	11.1	8.5	1.4	1.1	0.4	0.4	0.4	0.6	0.8	0.1	0.1	0.2	
Salmonella infections	-	..	..	..	..	..	..	8.9	11.9	19.3	16.3	19.3	17.4	15.2	12.9	18.2	28.7	31.4
Measles	429.1	247.7	509.6	705.4	550.4	438.4	335.6	..	..	34.4	14.4	49.6	53.7	57.9	40.4	38.1	25.3	95.0
Streptococcal sore throat and scarlet fever	190.5	125.8	198.5	153.9	80.5	110.4	72.7	71.6	100.9	50.0	56.0	71.7	90.3	94.9	81.3	100.8	100.5	

Source: Vital Statistics and Disease Registries Section, Health Division, **Statistics Canada.**

TABLE 66. Number of Deaths from Selected Notifiable Diseases, Canada, 1924-1978

Disease	1924	1931	1936	1941	1946	1951	1956	1961	1966	1971	1972	1973	1974	1975	1976	1977	1978
Tuberculosis	7,675	7,645	6,846	6,157	5,941	3,481	1,256	769	669	447	453	407	330	278	264	260	220
Infectious hepatitis	..	..	..	9	23	49	103	133	75	95	71	87	57	54	49	49	50
Meningococcal infections	184	225	103	206	83	89	84	24	38	47	76	31	55	39	36	29	40
Venereal diseases	763	741	888	936	653	304	210	160	87	32	42	30	20	22	20	21	17
—Gonococcal infections	19	-	-	23	6	2	1	-	-	1	1	1	-	1	1	4	-
—Syphilis	382	460	589	913	645	301	209	160	87	31	41	29	20	21	19	17	17
—Other	362	281	299	-	2	1	-	-	-	-	-	-	-	-	-	-	-
Diarrhoea of newborn, epidemic	148	338	172	218	337	185	149	86	25	13	16	18	11	4	17	25	22
Salmonella infections	..	..	..	..	..	..	1	13	9	8	5	6	8	8	12	7	8
Measles	701	167	377	325	235	184	177	96	50	11	2	10	20	7	7	8	9
Streptococcal sore throat and scarlet fever	509	253	244	198	104	48	24	13	8	2	-	1	2	1	1	1	2

Source: Vital Statistics and Disease Registries Section, Health Division, **Statistics Canada.**

Chapter IV

Utilization of Health Services

UTILIZATION OF HEALTH SERVICES

In the use of health services, factors other than health status come into play including the availability and accessibility of services, costs, particularly those not covered by either private or public insurance plans, and methods of treatment. For these reasons, the reader must keep in mind that the statistics here do not indicate need for services but rather only the services actually provided.

The information presented here comes from both administrative sources and surveys of the population. Differences in data collection methods mean that comparisons between data from the two sources should be approached with care. Note that the section on dental services provides information not only on the use of dental services, but also on some dental health status measures and prevention.

Hospital Services

In the 1977-1978 fiscal year, patients spent over 51 million days in public hospitals, including more than 5 million days in mental institutions for an average rate of 2.19 days a person. While the number of days spent in general and allied special hospitals increased 15.3% from 40 million in 1970 to 46.2 million in 1977-1978, the number of days spent in mental hospitals for the same period decreased 75% (from 20.1 million days to 5.1 million days). This phenomenon was the result of extensive changes in the treatment locations for many mental patients and not a decrease in prevalence of mental disorders (Tables 67 and 68).

During the past decade there has been a change in emphasis toward integrating mental patients into the community instead of isolating them in institutions. This trend is reflected through shorter hospital stays and follow-up programs of out-patient visits to psychiatric clinics and special care facilities and drug therapy. The most dramatic decrease in patient-days occurred in Quebec where less than half a million days were reported by mental hospitals in 1977-1978, sharply contrasting with the 6.7 million in 1970.

The rate of patient-days per capita in general and allied special hospitals was highest in Quebec (2.33) in 1977-1978 and lowest in Newfoundland (1.39). Quebec also had the highest average length of stay in hospital (18.7 days), significantly higher than the Canada average of 12.7. The high rate difference in Quebec is related to the significant shift toward chronic care beds in the province, beginning in 1976.

The rate of patient-days in hospitals varied by sex and age in Canada. In the 15-24 and the 25-44 years age groups, the rate for women was double that for men. The greater utilization rate by women could be explained by the fact that these years represent their primary childbearing period. Men experienced much higher rates in the 45-64 year old age group, most likely due to the greater tendency of men than women to suffer heart ailments. Both men and women over 65 years used days of care in hospitals at a rate of 824,226 per 100,000 population (Table 69).

The length of stay in hospital varied significantly by age group. For persons up to 44 years of age, stays in hospital averaged about one week (Table 70). In the 45-64 years

TABLE 67. Utilization Indicators, Public General and Allied Special Hospitals, 1970 to 1977-1978

Years	Separations	Days of care	Days per capita	Average length of stay
1970	3,427,442	40,040,656	2.80	11.7
1971	3,556,442	40,907,325	2.77	11.5
1972	3,596,310	40,521,589	2.67	11.3
1973	3,657,620	40,757,455	2.60	11.1
1974	3,703,264	41,758,504	2.54	11.3
1975	3,701,473	42,844,899	2.52	11.6
1976	3,652,005	44,993,274	2.41	12.3
CANADA 1977-1978	**3,620,411**	**46,179,370**	**1.97**	**12.8**
Newfoundland	89,268	787,121	1.39	8.8
Prince Edward Island	25,558	208,624	1.71	8.2
Nova Scotia	138,848	1,351,902	1.61	9.7
New Brunswick	123,431	1,248,230	1.80	10.1
Quebec	780,584	14,623,355	2.33	18.7
Ontario	1,319,110	14,619,784	1.73	11.1
Manitoba	166,061	1,811,032	1.75	10.9
Saskatchewan	202,803	2,120,637	2.24	10.5
Alberta	361,887	3,915,725	2.01	10.8
British Columbia	410,874	5,473,349	2.17	13.3
Northwest Territories	1,987	19,611	0.45	9.9

Source: Institutional Statistics Section, Health Division, **Statistics Canada.**

TABLE 68. Total Patient-days, Public General and Allied Special Hospitals and Mental Institutions,[1] Canada and Provinces, 1970 to 1977-1978

	1970	1971	1972	1973	1974	1975	1976
	in thousands						
General and allied special hospitals	40,040.7	40,907.3	40,521.6	40,757.5	41,758.5	42,844.9	44,993.3
Mental institutions	20,112.6	19,223.0	17,902.2	17,118.8	15,547.1	14,761.0	10,872.5
Rate per capita	2.80	2.77	2.66	2.60	2.54	2.52	2.41

	1977-1978[2]				
	Public General and allied special hospitals[3]	Psychiatric units	Rate per capita	Mental institutions	Total rate
CANADA	**44,024,612**	**2,154,758**	**1.97**	**5,054,441**	**2.19**
Newfoundland	750,481	36,640	1.39	133,253	1.62
Prince Edward Island	208,624	-	1.71	86,812	2.42
Nova Scotia	1,339,755	12,147	1.61	249,900	1.91
New Brunswick	1,222,662	25,568	1.80	335,085	2.28
Quebec	13,825,881	797,474	2.33	446,732	2.40
Ontario	13,879,047	740,737	1.73	2,164,160	1.99
Manitoba	1,719,735	91,297	1.75	339,017	2.08
Saskatchewan	2,038,846	81,791	2.24	122,490	2.37
Alberta	3,779,806	135,919	2.01	405,590	2.22
British Columbia	5,240,164	233,185	2.17	771,402	2.47
Northwest Territories	19,611	-	0.45	-	0.45

[1] See text for an explanation of the decrease in patient-days spent in Mental institutions.
[2] Fiscal year April 1, 1977 to March 31, 1978.
[3] Excludes psychiatric units.
Source: Institutional Statistics Section, Health Division, **Statistics Canada.**

age group, the average stay increased to 12.3 days, those 65 years and over averaged nearly 25 days in hospital per stay. As studies already have indicated, the 65 and over age group is expected to increase from 8.7% of the population to about 20% by the year 2031.[1] At the rate of hospital use (about 38% of occupancy) and as this age group grows, by 2022 every hospital bed now available to the total population could be filled by an elderly person.[2]

In 1977-1978 there were 11.2 million out-patient visits for ambulatory care in Canada, a rate of 480 per 1,000 people. In the provinces, the rate of visits per 1,000 population varied from 69 per 1,000 in Prince Edward Island to 1,124 per 1,000 in Quebec (Table 71).

[1] *A Prognosis for Hospitals, the Effects of Population Change on the Need for Hospital Space, 1967-2031,* **L.A. Lefebvre, Z. Zigmong, M.S. Devereaux,** Statistics Canada, 1979, Ottawa.

TABLE 69. Rate of Patient-days in General Hospitals by Age Group and Sex, Canada, 1977

Age group	Days per 100,000 population		
	Male	Female	Total
Under 1 year	249,829	200,133	225,572
1-14 years	48,640	38,385	43,640
15-24 "	51,132	100,295	75,434
25-44 "	69,988	141,602	105,640
45-64 "	224,879	204,327	214,393
65 years and over	819,027	828,302	824,226

Source: Institutional Care Section, Health Division, **Statistics Canada.**

TABLE 70. Average Length of Stay in Hospital, Canada, 1977

	Age group				
	0-14 years	15-24 years	25-44 years	45-64 years	65 years and over
Average length of stay (days)	5.6	5.9	7.1	12.3	24.4

Source: Institutional Care Section, Health Division, **Statistics Canada.**

Physician Services

As indicated in Table 72, for the fiscal year 1978-1979 there were approximately 94.3 million visits to physicians' offices, an average of four visits each. The rate of office visits was considerably higher in Central Canada than in the other regions of the country. Possible explanations for this difference are a higher physician/population ratio in these regions leading to easier access to physicians' services or a higher demand for services by people in these more densely-populated regions. Most likely it is a combination of these factors. In contrast, the Central region had much lower rates of hospital and home visits than either the Atlantic or the Western regions.

[2] *Ibid.*

TABLE 71. Hospital Services[1] to Ambulatory Care Out-patients, Canada and Provinces, 1977-1978

	Emergency out-patient visits for ambulatory care	Rate per 1,000 population
CANADA	**11,158,390**	**480**
Newfoundland	546,531	969
Prince Edward Island	8,281	69
Nova Scotia	158,051	189
New Brunswick	55,494	81
Quebec	7,053,125	1,124
Ontario	2,357,423	282
Manitoba	258,382	251
Saskatchewan	112,483	120
Alberta	302,802	160
British Columbia	272,880	109
Northwest Territories	32,938	761

[1] Reliable data for hospital out-patient visits were not available.
Source: Institutional Statistics Section, Health Division, **Statistics Canada.**

On average, there were 280 physician consultations for every 1,000 Canadians (Table 72). The Atlantic region had the lowest rate (243 per 1,000). Major and minor surgery attributed for the lowest rate of the six selected medical services and accounted for about 65% (for Canada as a whole) of all services paid on a fee-for-service basis. There were 101 minor and 67 major surgeries performed for every 1,000 people in Canada. As was the case with office visits, the rate of major and minor surgery was much higher in the Central region than the rest of Canada. More specialized treatment facilities and teaching hospitals in the Central region could be one reason for this situation.

Results from the Canada Health Survey[3] indicate that the majority of Canadians (76.3%) made at least one visit to a medical doctor during the course of a year (1978-1979). Many had multiple visits, with about 25% reporting three to nine visits to a doctor and another 9.4% indicating 10 or more (Table 73).

The frequency of visits varied substantially by region, age and sex. Table 74 indicates that fewer Quebec residents visited a medical doctor than Canadians in other regions (70.7% compared with 72.9% in the Atlantic region, 80.7% in Ontario, 76.9% in the Prairies and 77.7% in British Columbia). Multiple visits were not as frequent in Quebec (30% had three or more, compared to 33.8% in the Atlantic region, 39.3% in Ontario, 33.7% in the Prairies and 36.5% in British Columbia).

On the whole, women visited medical doctors in greater numbers and more frequently than men. About 81.3% of women reported at least one visit compared to 71.3% for men and 40.8% had three or more visits contrasted with 29.2% for men. Slightly more than two-fifths of women (41%) in the 15-44 years age group had three or more visits while only 21% of men in this age group reported this number of consultations. The proportion of multiple visits for elderly women was high as well, with those who made 10 or more visits exceeding 20% (Tables 73, 74).

The frequency of visits followed a consistent pattern by age, with young children (0-4 years) having more visits than older children (5-14 years) and young adults (15-24 years). From this age on, the frequency of consultations increased with age, with the highest proportion of multiple visits being made by the elderly (Table 73).

People who had health problems but chose not to consult a professional, gave the following reasons: problem not serious enough (39.6%), under control (30%), costs too much (4.1%), takes too much time (2.4%), other (19.5%) and unknown (4.4%) (Table 75).

Although the cost of health care did not appear to be a major deterrent in seeking professional help, it was a more frequently indicated reason with respect to dental problems (30%) and sight disorders. Many Canadians were not covered by dental insurance plans and found treatment too costly. It is possible that the 14% of people who hesitated to seek professional treatment for sight disorders were apprehensive about having to pay for glasses not covered under medical insurance plans.[4]

With respect to not seeking professional help, certain trends became evident when looking at specific health problems. For short-term disorders or relatively minor condition such as acute respiratory infection and influenza, as well as arthritis and rheumatism and hearing and sight disorders, most people reported that the problem was not serious enough. For more serious longer-term problems, such as mental disorders, diabetes, thyroid disorders, hypertension, heart disease, asthma or ulcers, people indicated that they were under control. Only a very small number who did not seek help reported that it takes too much time. This occurred predominantly with sight, hearing and dental disorders.

Dental Services

Utilization

Table 76 shows that in 1978, the estimated $918.1 million spent on dental care represented 0.4% of the GNP and slightly less than 6% of total health expenditures in Canada.[5]

The Canada Health Survey showed that the frequency of consultations with a dentist in a 12 month period (1978-1979) was lowest in the Atlantic provinces where only 41.5% of the population reported one or more visits.

[3] See *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, pp. 161-186.
[4] See *The Health of Canadians*, pp. 163-168.
[5] *Dental Health of Canadian - A Perspective*, **Canadian Dental Association**, March 1980, Ottawa.

TABLE 72. Medical Services[1] by Type of Service,[2] Canada[3] and Regions,[4] 1978-1979[5] (Preliminary Data)

Type of service and region	Number of services	Rate per 1,000 population	Lowest rate	Median rate	Highest rate
Office visits[6]					
Western	24,157,691	3,738			
Central	62,736,037	4,257			
Atlantic	7,402,288	3,621			
Canada	94,296,016	4,056	3,069	3,762	4,476
Hospital visits[7]					
Western	6,054,589	937			
Central	13,092,047	888			
Atlantic	1,886,837	923			
Canada	21,033,473	905	745	908	1,488
Home visits[8]					
Western	1,522,203	236			
Central	2,271,210	154			
Atlantic	718,313	351			
Canada	4,511,726	194	135	232	513
Consultations[9]					
Western	1,744,308	270			
Central	4,279,120	290			
Atlantic	496,665	243			
Canada	6,520,093	280	175	231	363
Major surgery[10]					
Western	410,308	63			
Central	1,016,970	69			
Atlantic	134,367	66			
Canada	1,561,645	67	54	66	68
Minor surgery[11]					
Western	525,794	81			
Central	1,676,067	114			
Atlantic	152,110	74			
Canada	2,353,971	101	49	78	125

[1] Includes only services paid on a fee-for-service basis by provincial medical care insurance programs. Services provided to persons covered by other public programs, e.g. those relating to workers' compensation legislation, and uninsured services, e.g. cosmetic surgery, are excluded. Also excluded are services performed by out-of-province physicians, and all services provided on a salaried or other non-fee basis.

[2] The selected service types shown in the table account for about 65% (for Canada as a whole) of all services paid on a fee-for-service basis. Among other types of services are obstetrical care, anaesthesia and surgical assistance, radiology and laboratory procedures, and assorted other diagnostic/therapeutic procedures.

[3] The data exclude information on the utilization of services in the two northern territories, services received by about 41,200 residents of the Swift Current Health Region of Saskatchewan. In Newfoundland, a considerable proportion of the population obtain most of their medical services from salaried physicians employed in cottage hospitals, or by such organizations as the International Grenfell Association. To minimize distortions the rates of fee services per 1,000 population in that province were calculated on the basis of two-thirds of the covered population.

[4] The "Atlantic" region comprises Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick. Quebec and Ontario form the "Central" region; and Manitoba, Saskatchewan, Alberta and British Columbia make up the "West".

[5] Except for Quebec, Ontario and Newfoundland, the statistics correspond to the date when the service was paid and not when it was rendered. The average time between the date a service is rendered and when it is paid varies between just under one month to a little over two months, depending upon province.

[6] Includes complete examinations, including routine health examinations, carried out in physicians' offices. The count includes only visits for which a separate payment was made. Office visits for which the payment is included in a composite fee, e.g. as is the case for most major surgery and many obstetrical services, are not counted (see also note 10 below).

[7] The term "hospital visits" does not have the same meaning from one province to another. In Saskatchewan and New Brunswick, the physician is entitled to remuneration for each day his patient spends in hospital regardless of the actual number of visits. In Manitoba and Quebec, during the first four weeks of hospitalization, physicians are paid on a *per diem* basis, and then payments are for each visit made. Some hospital visits may be included in composite fees, and consequently are not counted here (see note 6 above and 10 below).

[8] Home visits may include services performed in hospital emergency or out-patient departments, convalescent homes, nursing homes or infirmaries where the physician is required to travel to reach the facility. As well, emergency visits to any locality may be included.

[9] In some provinces, the consultation fee becomes part of the composite operative fee where the surgery occurs within a short time, usually thirty days from the date of consultation.

[10] The distinction between major and minor surgery was established according to the fee schedule for Ontario for 1971. If the cost of a surgical set in Ontario was less than $50, this act was classified as minor as were all similar acts in other provinces. Otherwise, if the cost was equal to or greater than $50, it was called major surgery. It must be noted that most major surgery, as well as many obstetrical and some minor surgical and major diagnostic/therapeutic services are paid by composite fee. That is, the physician receives a single payment for performing the main procedure as well as for visits, consultations and minor diagnostic/therapeutic services associated with it.

[11] Services such as dilation and curettage are treated as diagnostic/therapeutic procedures, and are not included under surgery.

Source: Health Information Division, Information Systems Directorate, Policy, Planning and Information Branch, **Department of National Health and Welfare**, January 1981.

TABLE 73. Population by Frequency of Consultations with a Medical Doctor During Last 12 Months, by Age and Sex, Canada, 1978-1979

		Frequency of consultations					
		Total	No consultation	1-2 consultations	3-9 consultations	10 consultations and over	Unknown
		in thousands					
All ages:							
Both sexes	No.	**23,023**	**5,297**	**9,509**	**5,902**	**2,162**	**153**
	%	**100.0**	**23.0**	**41.3**	**25.6**	**9.4**	**0.7**
Male	No.	**11,417**	**3,194**	**4,807**	**2,571**	**762**	**83**
	%	**100.0**	**28.0**	**42.1**	**22.5**	**6.7**	**0.7**
Female	No.	**11,606**	**2,103**	**4,702**	**3,331**	**1,400**	**70**
	%	**100.0**	**18.1**	**40.5**	**28.7**	**12.1**	**0.6**
Less than 5:							
Male	No.	880	71	336	410	61	--
	%	100.0	8.0	38.1	46.6	6.9	--
Female	No.	838	94	340	336	67	--
	%	100.0	11.2	40.5	40.1	8.0	--
5-9:							
Male	No.	914	183	468	211	49	--
	%	100.0	20.0	51.2	23.1	5.4	--
Female	No.	868	213	412	205	31	--
	%	100.0	24.6	47.5	23.6	3.6	--
10-14:							
Male	No.	1,038	332	481	181	41	--
	%	100.0	32.0	46.3	17.4	4.0	--
Female	No.	992	350	455	147	36	--
	%	100.0	35.3	45.9	14.8	3.6	--
15-19:							
Male	No.	1,187	481	475	176	52	--
	%	100.0	40.5	40.0	14.8	4.3	--
Female	No.	1,146	330	463	262	80	--
	%	100.0	28.8	40.4	22.9	7.0	--
20-24:							
Male	No.	1,106	352	475	226	38	14
	%	100.0	31.9	43.0	20.4	3.4	1.3
Female	No.	1,108	128	466	377	125	--
	%	100.0	11.6	42.1	34.0	11.3	--
25-44:							
Male	No.	3,230	1,047	1,445	569	137	32
	%	100.0	32.4	44.7	17.6	4.2	1.0
Female	No.	3,242	450	1,367	944	463	18
	%	100.0	13.9	42.2	29.1	14.3	0.5
45-64:							
Male	No.	2,174	579	838	513	227	17
	%	100.0	26.6	38.6	23.6	10.4	0.8
Female	No.	2,279	385	863	674	345	11
	%	100.0	16.9	37.9	29.6	15.1	0.5
65 and over:							
Male	No.	887	149	290	285	157	--
	%	100.0	16.8	32.7	32.1	17.7	--
Female	No.	1,132	152	336	385	253	8
	%	100.0	13.4	29.6	34.0	22.4	0.6

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 86.

TABLE 74. Population by Frequency of Consultations with a Medical Doctor During Last 12 Months, by Sex, Canada and Regions, 1978-1979

		Frequency of consultations					
		Total	No consultation	1-2 consultations	3-9 consultations	10 consultations and over	Unknown
		in thousands					
Canada:							
Both sexes	No.	**23,023**	**5,297**	**9,509**	**5,902**	**2,162**	**153**
	%	**100.0**	**23.0**	**41.3**	**25.6**	**9.4**	**0.7**
Male	No.	**11,417**	**3,194**	**4,807**	**2,571**	**762**	**83**
	%	**100.0**	**28.0**	**42.1**	**22.5**	**6.7**	**0.7**
Female	No.	**11,606**	**2,103**	**4,702**	**3,331**	**1,400**	**70**
	%	**100.0**	**18.1**	**40.5**	**28.7**	**12.1**	**0.6**
Atlantic region:							
Male	No.	1,092	344	430	241	67	10
	%	100.0	31.5	39.4	22.1	6.1	0.9
Female	No.	1,098	229	426	318	114	11
	%	100.0	20.9	38.7	29.0	10.4	1.0
Quebec:							
Male	No.	3,059	1,074	1,265	582	132	--
	%	100.0	35.1	41.4	19.0	4.3	--
Female	No.	3,139	730	1,262	799	344	--
	%	100.0	23.3	40.2	25.4	11.0	--
Ontario:							
Male	No.	4,121	940	1,766	1,031	356	28
	%	100.0	22.8	42.8	25.0	8.7	0.7
Female	No.	4,215	614	1,688	1,303	584	26
	%	100.0	14.6	40.0	30.9	13.9	0.6
Prairie region:							
Male	No.	1,914	499	843	427	113	33
	%	100.0	26.1	44.0	22.3	5.9	1.7
Female	No.	1,905	323	808	531	216	26
	%	100.0	17.0	42.4	27.9	11.3	1.4
British Columbia:							
Male	No.	1,230	336	503	290	93	--
	%	100.0	27.3	40.9	23.6	7.6	--
Female	No.	1,248	207	518	379	142	--
	%	100.0	16.5	41.5	30.4	11.3	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 87.

TABLE 75. Health Problems by Reasons for Not Seeking Help, by Type of Health Problem, Canada, 1978-1979

Type of health problem:		Total number of problems	Problems with consultation	Reasons for not seeking help					
				Not serious enough	Under control	Costs too much	Takes too much time	Other	Unknown
		in thousands							
Total	No.	**25,526**	**16,802**	**3,458**	**2,613**	**356**	**212**	**1,704**	**380**
	%	**100.0**	**65.8**	**13.5**	**10.2**	**1.4**	**0.8**	**6.7**	**1.5**
Mental disorders	No.	1,000	855	34	70	--	--	29	11
	%	100.0	85.6	3.4	7.0	--	--	2.9	1.1
Diabetes	No.	379	345	--	17	-	-	--	--
	%	100.0	91.1	--	4.5	-	-	--	--
Thyroid disorders	No.	297	214	13	53	--	--	--	--
	%	100.0	72.1	4.5	17.9	--	--	--	--
Anemia	No.	417	319	26	52	--	--	--	--
	%	100.0	76.5	6.2	12.4	--	--	--	--
Headache	No.	1,102	674	170	133	--	14	92	14
	%	100.0	61.2	15.5	12.0	--	1.3	8 3	1 3
Sight disorders	No.	1,200	607	169	60	78	34	228	25
	%	100.0	50.6	14.1	5.0	6 5	2.8	19.0	2.0
Hearing disorders	No.	1,028	472	236	67	20	24	188	22
	%	100.0	45.9	23.0	6.5	2.0	2.3	18.2	2 1
Hypertension	No.	1,551	1,422	26	52	-	--	14	25
	%	100.0	91.7	1.7	3 4	-	--	0.9	1.6
Heart disease	No.	847	758	19	44	-	--	17	7
	%	100.0	89.5	2.2	5 2	-	--	2.0	0.9
Acute respiratory	No.	781	403	321	25	--	-	19	12
	%	100.0	51.7	41.1	3.2	--	-	2 5	1.5
Influenza	No.	680	301	310	29	--	--	18	18
	%	100.0	44.3	45.7	4.2	--	--	2.7	2.7
Bronchitis and emphysema	No.	562	417	57	50	-	--	25	--
	%	100.0	74.2	10.2	8.9	-	--	4.5	--
Asthma	No.	547	368	62	96	-	--	16	--
	%	100.0	67.2	11.4	17.5	-	--	2.9	--
Hay fever	No.	2,157	1,056	501	462	--	16	90	29
	%	100.0	49.0	23.3	21.4	--	0.7	4 2	1 3
Dental problem	No.	1,697	921	229	40	233	41	203	30
	%	100.0	54.3	13.5	2.3	13.7	2.4	12.0	1.7
Gastric and duodenal ulcers	No.	482	310	31	119	--	--	10	--
	%	100.0	64.3	6.4	24.6	--	--	2.0	--
Digestive disorders	No.	687	470	91	77	--	--	36	10
	%	100.0	68.4	13.2	11.1	--	--	5.3	1.5
Skin disorders	No.	2,064	1,244	271	389	--	--	123	27
	%	100.0	60.3	13.1	18.9	--	--	6.0	1 3
Arthritis and rheumatism	No.	2,440	1,431	585	214	--	13	165	28
	%	100.0	58.7	24.0	8.8	--	0.5	6 8	1.2
Limb and joint disorders	No.	2,334	1,538	151	342	--	16	233	52
	%	100.0	65.9	6.5	14.6	--	0.7	10 0	2 2
Trauma	No.	616	507	34	31	--	--	31	--
	%	100.0	82.3	5.5	5.0	--	--	5.1	--
Other	No.	2,658	2,170	118	191	4	13	138	24
	%	100.0	81.6	4.4	7.2	0.2	0 5	5 2	0 9

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.,* Table 92.

TABLE 76. Expenditures for Dental Services in Canada,[1] 1960-1979

Year	Dental expenditures		
	In millions of dollars	As per cent of GNP	As per cent of total health expenditures
1960	109.6	0.29	5.09
1965	160.1	0.29	4.75
1970	264.8	0.31	4.35
1975	592.3	0.36	5.08
1976	699.8[2]	0.37	5.13
1977	827.6[2]	0.40	-
1978	918.1[2]	0.40	-
1979	1,090.4[3]		

[1] National Health Expenditures in Canada, 1960-1975.
[2] Preliminary estimates from Health and Welfare Canada.
[3] Provisional figures from Health and Welfare Canada.
Source: Information Systems Directorate, Policy, Planning and Information Branch, **Health and Welfare Canada.**

Quebec was second lowest at 42.9%, followed by British Columbia with 44.8%. In Ontario, 55.6% indicated they had one or more consultations with a dentist, while in the Prairies, the figure was 49.3% (Tables 77 and 78).

One of the most significant health care developments in Canada since 1970 has been the growth of dental insurance. Group dental insurance continues to be the fastest growing employee benefit across Canada.[6] From 1970 to 1978, the number of Canadians with dental insurance grew 1,787%.[7] More than 6.5 million Canadians or 28.4% of the population was insured by a third-party payment scheme in 1978 (Table 79). By far the largest segment, 4.8 million or 73% of Canadians insured in dental plans, were covered by private, third-party systems. The remainder were covered under publicly-funded plans, aimed mainly at children, except in Alberta where those 65 years and over and their dependents were covered.

Hence, only 7.7% of the Canadian population were covered by publicly funded insurance systems and, of those people, 73% resided in Quebec.

A recent study (1978-1979) conducted in Ontario by the Faculty of Dentistry at the University of Toronto revealed that those who were insured under a dental plan, generally were younger, had higher incomes than non-insured respondents and tended to have more than a public school education.[8] The insured respondents reported higher utilization of dental services with about 22% more visits in 1978 and 34% more in 1979. Slightly more men (47.8%) than women (43.8%) and a much higher percentage of union members (70.2%) than non-union members (33.3%) had insurance. People who were widowed, separated or divorced had notably less insurance as a group (27.2%) than the single or married respondents (about 48%), and the percentages insured increased as the number in the family increased.[9]

Dental Health Status Measures

Based on available data, the dental health of Canadians is better today than it has ever been in Canada's history[10] (see Decayed, Missing and Filled Teeth (DMFT)[11] indicators in Tables 80 and 81). Although information is incomplete, there appears to be regional disparity in dental health, however. Among the provinces which have not fared as well as the rest of the nation are Quebec and the Atlantic provinces.[12]

Data describing the dental health of all Canadians (Decayed, Missing and Filled Teeth indicators (DMFT)) are not currently available for all ages, and by sex. However, recent studies conducted in Alberta, Manitoba, Ontario and Quebec provide a relatively good indication of the state of the dental health of school-age children, particularly those 13 and 14 years of age. The Manitoba study concentrated only on children 13 years old. As shown in Table 80, these studies showed noticeable variation from one province to another.

Children in Quebec were missing on average 1.5 teeth, compared with 0.2 teeth in Ontario and Alberta. Yet, in Quebec the average number of filled teeth in children in this age group (at 2.4) were lower than Alberta (3.4) and Ontario (3.0) (Table 81). Quebec children also reported a higher number of decayed teeth, averaging 5.0 per child compared with 1.3 per child in Alberta and 1.2 per child in Ontario. In Manitoba, children 13 years old averaged 2.1 decayed teeth in urban centres and 3.9 decayed teeth in rural areas.

People with no teeth (edentulism) increases significantly with age, particularly after 30 years (Table 82). According to the Nutrition Canada dental report, 26.6% of women 19 years and older (in 1970-1972) were completely edentulous, compared with 20.3% of men who had no teeth.[13] The biggest differences between men and women occurred between the ages 30 and 40 where almost four times more women than men were edentulous, suggesting the possibility that women in this age group were acquiring dental plates for an esthetic reason. About half the male population 60 years and over were completely edentulous (49.5%) and another 18.6% were edentulous in either the upper or lower arches. For the same age group, complete edentulism was reported in 55.7% of women; an additional 20.7% of women had no teeth in one or the other arches. The frequency of women with edentulism was higher in this age group, primarily because there were so many more women 75 years and older.

[6] *Ibid.*
[7] *Ibid.*
[8] *Research Report - Ontario Adult Dental Visits - Priorities, Attitudes Insurance*, **D.W. Lewis,** 1980, Faculty of Dentistry, University of Toronto.
[9] *Ibid.*
[10] *Dental Health of Canadians – A Perspective, op. cit.*
[11] The DMFT index is calculated by adding the three measures together. An index of 0.0 would indicate no decayed, missing or filled teeth, i.e., perfect dental health.
[12] *Dental Health of Canadians – A Perspective, op. cit.*
[13] *Nutrition Canada Survey – Dental Report*, **Health and Welfare Canada, 1977,** Ottawa.

TABLE 77. Population by Frequency of Consultations with a Dentist During Last 12 Months, by Sex, Canada and Regions, 1978-1979

		Frequency of consultations					
		Total	No consultation	1-2 consultations	3-9 consultations	10 consultations and over	Unknown
		in thousands					
Canada:							
Both sexes	No.	**23,023**	**11,443**	**8,909**	**1,900**	**643**	**128**
	%	**100.0**	**49.7**	**38.7**	**8.3**	**2.8**	**0.6**
Male	No.	**11,417**	**5,892**	**4,319**	**860**	**272**	**73**
	%	**100.0**	**51.6**	**37.8**	**7.5**	**2.4**	**0.6**
Female	No.	**11,606**	**5,551**	**4,589**	**1,039**	**372**	**55**
	%	**100.0**	**47.8**	**39.5**	**9.0**	**3.2**	**0.5**
Atlantic region:							
Male	No.	1,092	647	338	73	25	10
	%	100.0	59.3	30.9	6.7	2.3	0.9
Female	No.	1,098	618	368	76	29	8
	%	100.0	56.2	33.5	6.9	2.6	0.7
Quebec:							
Male	No.	3,059	1,813	1,006	183	52	--
	%	100.0	59.3	32.9	6.0	1.7	--
Female	No.	3,139	1,708	1,107	233	75	--
	%	100.0	54.4	35.3	7.4	2.4	--
Ontario:							
Male	No.	4,121	1,875	1,801	313	106	26
	%	100.0	45.5	43.7	7.6	2.6	0.6
Female	No.	4,215	1,785	1,856	426	131	--
	%	100.0	42.4	44.0	10.1	3.1	--
Prairie region:							
Male	No.	1,914	983	706	151	47	27
	%	100.0	51.4	36.9	7.9	2.4	1.4
Female	No.	1,905	915	758	161	59	--
	%	100.0	48.0	39.8	8.5	3.1	--
British Columbia:							
Male	No.	1,230	573	469	140	42	--
	%	100.0	46.6	38.1	11.4	3.4	--
Female	No.	1,248	524	500	142	79	--
	%	100.0	42.0	40.1	11.4	6.3	--

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 89.

TABLE 78. Population by Frequency of Consultations with a Dentist During Last 12 Months, by Age and Sex, Canada, 1978-1979

		Frequency of consultations					
		Total	No consultation	1-2 consultations	3-9 consultations	10 consultations and over	Unknown
		in thousands					
All ages:							
Both sexes	No.	**23,023**	**11,443**	**8,909**	**1,900**	**643**	**128**
	%	**100.0**	**49.7**	**38.7**	**8.3**	**2.8**	**0.6**
Male	No.	**11,417**	**5,892**	**4,319**	**860**	**272**	**73**
	%	**100.0**	**51.6**	**37.8**	**7.5**	**2.4**	**0.6**
Female	No.	**11,606**	**5,551**	**4,589**	**1,039**	**372**	**55**
	%	**100.0**	**47.8**	**39.5**	**9.0**	**3.2**	**0.5**
Less than 5:							
Male	No.	880	715	140	17	5	- -
	%	100.0	81.2	15.9	1.9	0.6	- -
Female	No.	838	653	152	28	-	- -
	%	100.0	77.9	18.1	3.3	-	- -
5-9:							
Male	No.	914	229	542	122	19	- -
	%	100.0	25.1	59.2	13.3	2.1	- -
Female	No.	868	194	508	127	- -	- -
	%	100.0	22.3	58.5	14.7	- -	- -
10-14:							
Male	No.	1,038	274	598	114	47	- -
	%	100.0	26.4	57.6	11.0	4.5	- -
Female	No.	992	218	587	106	76	- -
	%	100.0	22.0	59.2	10.6	7.7	- -
15-19:							
Male	No.	1,187	502	535	111	35	5
	%	100.0	42.2	45.1	9.3	2.9	0.4
Female	No.	1,146	386	544	151	53	- -
	%	100.0	33.7	47.5	13.2	4.6	- -
20-24:							
Male	No.	1,106	560	426	74	27	19
	%	100.0	50.6	38.5	6.7	2.5	1.7
Female	No.	1,108	465	475	119	40	- -
	%	100.0	41.9	42.9	10.7	3.6	- -
25-44:							
Male	No.	3,230	1,624	1,228	262	95	21
	%	100.0	50.3	38.0	8.1	3.0	0.6
Female	No.	3,242	1,418	1,396	310	108	- -
	%	100.0	43.7	43.1	9.6	3.3	- -
45-64:							
Male	No.	2,174	1,302	685	135	36	15
	%	100.0	59.9	31.5	6.2	1.7	0.7
Female	No.	2,279	1,342	725	157	~ 50	- -
	%	100.0	58.9	31.8	6.9	2.2	- -
65 and over:							
Male	No.	887	686	165	26	- -	- -
	%	100.0	77.3	18.6	2.9	- -	- -
Female	No.	1,132	875	203	42	12	- -
	%	100.0	77.3	17.9	3.7	1.1	- -

Source: *The Health of Canadians: Report of the Canada Health Survey, op. cit.*, Table 88.

TABLE 79. Population Covered by Third-party Dental Payment Plans by Funding Agency, Canada and Provinces, 1978[1]

Province	Publicly funded	Non-profit agencies	Delta dental	Blue Cross/ voluntary plans	CAASI members	Total[8]	Percentage of population
Newfoundland	153,600				8,122[3]	161,722	28.47
Prince Edward Island	22,595				1,932[4]	24,527	20.15
Nova Scotia	157,900[2]				23,611[5]	181,511	21.53
New Brunswick	-				22,176	22,176	3.19
Quebec	1,328,874			71,000[10]	436,684[6]	1,836,558	27.00
Ontario	-	84,355	148,000	680,000	1,576,941	2,489,296	29.41
Manitoba	6,700				99,076[7]	105,776	10.21
Saskatchewan	-				51,102	51,102	5.41
Alberta	150,564		24,416		303,659	478,639	15.53
British Columbia	-	843,171			279,878	1,123,049	44.34
Yukon and Northwest Territories	-				2,480	2,480	3.64
CANADA	**1,820,233**	**927,526**	**172,416**	**952,683[9]**	**2,805,661**	**6,678,519[11]**	**28.39**

1 In some cases these figures are as of January 1, others as of December 31, and still others are unspecified as to time.
2 Administered by Maritime Medical Care Inc. but does not appear under voluntary plans.
3 An estimated 2,259 of these also covered by provincial dental payment program.
4 An estimated 427 of these also covered by provincial dental payment program.
5 An estimated 5,219 of these also covered by provincial dental payment program.
6 An estimated 115,346 of these also covered by provincial dental payment program.
7 An estimated 752 of these also covered by provincial dental payment program.
8 Totals corrected to eliminate double counting.
9 The difference between 952,683 and figures shown is due to small enrollments in New Brunswick, Manitoba and Saskatchewan.
10 An estimated 231,598 of these may be covered by provincial dental payment program.
11 The row total of 6,678,519 is the best estimate possible for 1978. It does not match the column total because the Blue Cross/Voluntary plan total could not be ascribed to all provinces with complete accuracy.
Source: *Dental Health of Canadians - A Perspective*, **Canadian Dental Association**, 1980, Ottawa.

TABLE 80. Mean Number of Decayed, Missing, Filled Teeth (DMFT), School-aged Children, 13-14 Years Old,[1] Selected Years, Selected Provinces

Province	Decayed, missing, filled teeth			
	Metro	Urban	Rural	Total
Alberta (1978)	4.8	5.0	5.1	4.9
Manitoba (1976)	-	4.5	6.7	4.6[2],6.8[3]
Ontario (1978)	-	-	-	4.3
Quebec (1977)	8.1	9.2	9.6	8.9

1 Includes 13 year olds only in Manitoba.
2 Those exposed to fluoridation.
3 Those not exposed to fluoridation.
Source: *CDA Journal*, February 1980.

TABLE 81. Caries Experience by Province, 13-14 Years Old[1], Selected Years

Province	Average number		
	Decayed	Missing	Filled teeth
Alberta (1978)	1.3	0.2	3.4
Manitoba-urban (1976)	2.1	0.1	2.4
Manitoba-rural (1976)	3.9	0.3	2.5
Ontario (1978)	1.2	0.2	3.0
Quebec (1977)	5.0	1.5	2.4

1 Includes 13 year olds only in Manitoba.
Source: *CDA Journal*, February 1980.

TABLE 82. Percentage of Persons Edentulous in Either or Both Arches, by Age and Sex, Canada, 1973

Age	Both arches		Lower arch only		Upper arch only	
	Male	Female	Male	Female	Male	Female
19 years	3.2	2.8	-	-	3.2	2.8
20-29 years	4.8	5.8	0.1	-	9.1	12.0
30-39 "	6.1	22.9	-	0.2	18.5	16.9
40-49 "	18.0	26.5	1.5	0.2	16.9	16.3
50-59 "	30.4	35.4	1.5	0.5	17.0	25.9
60 years and over	49.5	55.7	3.9	1.4	14.7	19.3
Total	**20.3**	**26.6**	**1.3**	**0.4**	**14.7**	**17.0**

Source: *Nutrition Canada, Dental Report*, **National Health and Welfare**, 1977.

Prevention

Since dental caries and periodontal disease are among the most common of all dental diseases faced by Canadians, the prevention of such diseases is particularly important.[14] Evidence of this fact has been provided by recent studies such as the Nutrition Canada Survey, the five provincial studies of school children, the Canada Health Survey and others.

The three main preventive actions include water fluoridation, topical fluoride application and strict adherence to oral hygiene procedures.[15]

Water fluoridation, at a concentration of 1.0 to 2.2 parts per million of fluoride in the drinking water, can reduce dental caries by about 50%.[16] "Fluoridation of communal water supplies should be the cornerstone upon which any national program of caries prevention is built. Fluoridation constitutes nearly an ideal public health program in that benefits are conferred regardless of family socio-economic level and education or the availability of dental manpower."[17]

Much of the population of Newfoundland (90.7%), Prince Edward Island (82.4%), New Brunswick (86.9%), Quebec (86.7%) and British Columbia (88.4%) are not being serviced by fluoridation systems (Table 83) and are experiencing high rates of tooth decay.[18] Large cities such as Montreal, Regina, Calgary, Vancouver and Victoria do not have fluoridation systems.

[14] *Dental Health of Canadians - A Perspective, op. cit.*
[15] *Ibid.*
[16] *Ibid.*

[17] **Horowitz, H.** "A review of systemic and topical fluorides for the prevention of dental caries." *Comm. Dent. Oral Epid.* 1:105=144, 1973.
[18] *Dental Health of Canadians - A Perspective, op. cit.*

TABLE 83. Fluoridation in Canada, by Provinces, as of December 31, 1976

Province or territory	Systems supplying fluoride	Population served	Percentage	
			Total population	Population on potable water systems
Newfoundland	4	52,335	9.3	16.1
Prince Edward Island	2	20,843	17.6	48.4
Nova Scotia	22	332,155	40.0	70.6
New Brunswick	5	88,691	13.1	24.9
Quebec	43	772,366	12.3	14.4
Ontario	122	5,155,381	62.3	72.3
Manitoba	48	667,912	65.3	84.1
Saskatchewan	113	333,496	36.2	58.2
Alberta	93	817,004	44.4	59.5
British Columbia	27	287,099	11.6	14.5
Yukon	2	11,800	54.0	78.6
Northwest Territories	6	18,472	43.3	73.8
CANADA	**487**	**8,557,554**[1]	**37.2**	**46.4**

[1]Of this total, 174,181 receive naturally occurring fluoride at a concentration greater than 0.7 mg/L.
Source: *Preventive Dental Services: Practices, Guidelines and Recommendations*, **Health and Welfare Canada**, Ottawa, 1979.

Chapter V

Health Care System

Health Care System

The health care system is experiencing difficulties on many fronts. Although stabilized at below 7.5% of GNP, there is still concern about costs. An increasing number of physicians have chosen to "opt-out" of provincial medical insurance plans or to "extra-bill" patients for portions of their fees not covered by the plans. In some small communities, there are apparent deficiencies of specialist services, while in larger centres there is an oversupply of medical personnel. It is hoped that the data presented in this final chapter will provide background for discussion of these issues. Data are presented on three aspects of the health care system: manpower, physical resources (facilities) and expenditures.

Health Manpower

Physicians

The number of active physicians in Canada, including interns and residents, increased at a rate far exceeding population growth from 1968 to 1978. There was a 50% increase in the number of physicians while the population grew 12.9%. In 1978, 51% of the active civilian physician population, excluding interns and residents, were general practitioners and family doctors. The remaining 49% were certified specialists. As there was an identical percentage distribution between general practitioners and family physicians and specialists in 1968, it seems that the tendency to acquire a specialty was no greater in 1978 than it was ten years earlier (Table 84).

The 50% increase in numbers of physicians from 1968 to 1978 can be attributed to two factors, the increasing number of medical graduates and the number of physicians moving to Canada from other countries. Prior to 1975, almost as many immigrant doctors as medical graduates in Canada[1] were added to the stock each year; in 1973 there were 1,170 physicians immigrating, and 1,331 medical graduates. The number immigrating to Canada dropped to 806 in 1975 and 401 in 1976; in 1978, only 263 moved to Canada.

Meanwhile, graduates from Canadian medical schools increased to 1,761 in 1978, more than six and a half times the number of immigrant physicians that year (Table 87).

The stock of physicians as it relates to the population reached the overall goal of 1:665 in 1978, a ratio set for

[1] *Immigration to Canada by Country of Former Residence - Physicians and Surgeons 1973-1979*, Health Economics and Data Analysis, Health Services and Promotion Branch, **Health and Welfare Canada**, 1980, Ottawa.

TABLE 84. Physicians - General and Family Practitioners, Specialists, Interns and Residents, Canada, 1968-1978

	Numbers and rates per 100,000 population									
	General and family practitioners		Specialists		Total number of active civilian physicians excluding interns and residents		Interns and residents		All physicians	
1968	11,778	56	11,191	54	22,969	110	5,240	25	28,209	135
1969	12,592	59	11,838	56	24,430	115	5,228	25	29,659	140
1970	13,023	61	12,633	59	25,656	120	5,510	26	31,166	145
1971	13,704	63	13,735	63	27,439	126	5,502	25	32,942	152
1972	14,302	65	14,304	65	28,606	130	5,901	27	34,508	157
1973	14,919	67	15,025	68	29,944	135	5,979	27	35,923	162
1974	15,545	69	15,563	69	31,108	138	6,189	27	37,297	165
1975	16,379	72	16,182	71	32,561	142	6,543	29	39,104	171
1976	17,036	74	16,718	72	33,754	146	6,376	28	40,130	173
1977	17,654	75	17,206	74	34,860	149	6,538	28	41,398	177
1978	17,913	76	17,519	74	35,433	150	6,805	29	42,238	179
	Provinces 1978									
Newfoundland	416	73	229	40	645	113	164	29	809	141
Prince Edward Island	91	74	52	43	143	117	4	03	147	120
Nova Scotia	701	83	555	66	1,256	149	283	33	1,539	182
New Brunswick	400	57	328	47	728	104	58	08	786	112
Quebec	4,133	66	5,525	88	9,658	154	1,948	31	11,606	185
Ontario	6,783	80	6,385	75	13,169	155	2,864	34	16,033	189
Manitoba	786	76	731	71	1,517	147	324	31	1,841	179
Saskatchewan	763	80	447	47	1,210	127	194	20	1,404	147
Alberta	1,401	71	1,224	62	2,625	132	542	27	3,167	160
British Columbia	2,386	93	2,027	79	4,413	173	424	17	4,837	189
Yukon	23	106	5	23	28	128	--	--	28	128
Northwest Territories	30	70	11	26	41	95	--	--	41	95.

Source: Canada Health Manpower Inventory, Health Information Division, **Health and Welfare Canada** 1969-1979.

1981 by the National Physician Requirements Committee established by Health and Welfare Canada. It was expected to increase to 1:634 by 1983. If general and family practitioners are examined as a separate group, there has been a surplus since 1975 when the recommended physician/population ratio was reached. Similarly, most medical specialties were at or approaching the recommended stock for 1981. In sharp contrast were surgical and other specialties which, with few exceptions, were not projected to reach the recommended physician/population ratio until after 1983.[2]

Provincial distributions of physicians, including interns and residents, differed significantly in 1978. Nova Scotia, Quebec, Ontario, Manitoba and British Columbia had relatively high physician/population ratios (over 179:100,000). In contrast were Prince Edward Island with a comparatively low ratio of 120 to 100,000 persons and New Brunswick with 112 to 100,000. These two provinces had a minimal number of interns and residents. Although the other provinces appear to have had an adequate supply of physicians, they were unevenly distributed. For instance, as of December 31, 1977 Ontario had a physician/population ratio of 1:639, second only to British Columbia with a ratio of 1:581. However, in Ontario, the ratio varied significantly from 1:1,450 in communities of under 10,000 to 1:874 for communities with populations between 10,000-24,999. In contrast, the ratio of 1:522 in population centres of 500,000 or more could indicate the preference of physicians for larger cities.[3]

General practitioners and family physicians outnumbered certified specialists in all provinces except Quebec. Of the 9,658 physicians in Quebec in 1978, 57.2% were specialists. In Newfoundland, specialists accounted for only 35.5% of the physician population and in Prince Edward Island, 36.4%, showing the tendency of specialists to locate in larger urban centres.

Dentists

The number of active dentists in Canada increased 50.5% from 1969 to 1978, far ahead of the 12.9% growth in population during the same period. In 1969, Canada had 33 dentists per 100,000 persons (Table 85); nine years later there were 44. Dental schools played a large role in the increase, with three new schools opening during the 10-year period. Most schools had relatively stable numbers of graduates. However, at the University of British Columbia graduates increased from 6 to 38, at the University of Western Ontario from 7 in 1970 to 56 in 1978, and at the University of Montreal from 56 in 1968 to 79 in 1978.

The ratio of dentists to population differed significantly by province. Newfoundland had the lowest ratio, 20 to 100,000 persons (Table 85). British Columbia had more than three times that ratio or 62 dentists to 100,000 persons. Ontario had the second highest ratio, 50:100,000. On the other hand, Saskatchewan with 25 and New Brunswick with 32 dentists per 100,000 persons, were relatively low.

TABLE 85. Active Dentists and Optometrists, Canada, 1969-1978

	Dentists		Optometrists	
	Number	Rate[1]	Number	Rate[1]
1969	6,933	33	1,440	7
1970	7,115	33	1,497	7
1971	7,453	34	1,511	7
1972	7,611	35	1,527	7
1973	7,825	35	1,547	7
1974	8,487	38	1,604	7
1975	8,738	38	1,685	7
1976	9,401	41	1,764	8
1977	10,058	43	1,841	8
1978	10,432	44	1,869	8
	Provinces 1978			
Newfoundland	116	20	15	3
Prince Edward Island	44	36	5	4
Nova Scotia	304	36	36	4
New Brunswick	176	25	53	8
Quebec	2,274	36	692	1
Ontario	4,276	50	587	7
Manitoba	422	41	60	6
Saskatchewan	302	32	88	9
Alberta	923	46	160	8
British Columbia	1,595	62	164	6
Yukon	-	-	2	9
Northwest Territories	-	-	7	16

[1] Per 100,000 population.

Source: Canada Health Manpower Inventory, Health Information Division, **Health and Welfare Canada.**

A possible explanation for the relatively low numbers of dentists in the Atlantic provinces, particularly New Brunswick, is that there is only one dental school in the region, in Nova Scotia. All provinces west of New Brunswick have one, or as in Ontario and Quebec, two dental schools. Provinces with these schools generally had appreciably higher dentist/population ratios than provinces without them. An exception was Saskatchewan which had a lower ratio than either Nova Scotia or Prince Edward Island and yet has a dental school. This may be because the school has been producing a small number of graduates, an average of 11 a year, and has only been in existence for six years.

Optometrists

In 1969 there were 1,440 active optometrists in Canada or 7:100,000 persons. By 1978, although their numbers

[2] *Projections of Physician Supply in Canada by Discipline*, Health Economics and Data Analysis, Health Services and Promotion Branch, **Health and Welfare Canada**, 1980, Ottawa.

[3] *Distribution of Canadian Physicians by Population Size*, Health Economics and Data Analysis, Health Services and Promotion Branch, **Health and Welfare Canada**.

increased 30% to 1,869, there were still just 8:100,000 (Table 85). Quebec and Ontario accounted for over 68% or 1,279 optometrists; these two provinces had the only two schools of optometry and over 60% of the population. The optometrist/population ratios in Newfoundland (3:100,000), Prince Edward Island (3:100,000) and Nova Scotia (4:100,000) were well below the ratio for Canada. At the other extreme, Quebec had a relatively high ratio with 11 optometrists to 100,000 persons.

Nurses

Nurses, who represent about two-thirds of all health manpower in Canada, are an integral part of the health care system. Registered nurses employed in nursing increased 54.5% from 104,258 in 1970 to 161,125 in 1978,[4] while the Canadian population grew only 9.9%. In 1970 there were 486 registered nurses employed in nursing for every 100,000 persons. In 1978 the nurse/population ratio had increased 40.6% to 683:100,000 (Table 86).

Five provinces had relatively low nurse/population ratios when compared to the national average. For every 100,000 persons the ratios were: British Columbia, 556; Newfoundland, 576; New Brunswick, 590; Saskatchewan, 635; and Manitoba, 658. All but one of the remaining provinces had a relatively high nurse/population ratio, led by Alberta 744. Prince Edward Island had 686, a ratio close to the national average.

Historically, almost all nurses have been female (99.2% in 1970), but there has been an increase in the number of male nurses since 1970, and the percentage of female nurses has decreased to approximately 98%.

Hospitals and related institutions have always employed the majority of nurses. The percentage working in hospitals has remained relatively stable during 1970-1978, increasing only slightly from 82% to 84.7%.

More nurses worked part-time (less than 35 hours per week) in 1978 than in 1970. In 1970, 30% were employed part-time in nursing; in 1978, the percentage had increased to 33%.

[4] *Health Manpower Statistics - Registered Nurses - 1978*, Health Division, **Statistics Canada**, 1979.

TABLE 86. Nurses Employed in Nursing and Qualified Nursing Assistants, Canada and Provinces, 1968-1978

	Nurses employed in nursing								
	1970	1971	1972	1973	1974[1]	1975	1976	1977	1978
Number	104,258	108,630	110,769	115,929	125,475	140,388	137,858	139,989	161,125
Rate per 100,000 population	485.71	500.38	504.82	521.37	555.97	613.48	595.30	598.49	683.05

	1978 by province											
	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.
Number	3,295	841	5,956	4,124	44,074	60,576	6,787	6,063	14,804	14,206	118	281
Rate per 100,000 population	575.56	685.97	704.19	590.15	702.63	714.36	658.17	635.33	743.99	555.68	541.28	648.96

[1] No imputation was performed for 1974 and before.
Source: Health Manpower Statistics Section, Health Division, **Statistics Canada**.

TABLE 86. Nurses Employed in Nursing and Qualified Nursing Assistants, Canada and Provinces, 1968-1978 - Concluded

	Qualified nursing assistants								
	1968	1969	1970	1971	1972	1973	1974	1975	1976
Number	28,764	32,230	34,098	36,151	39,093	38,266	38,877	40,660	40,151
Rate per 100,000 population	137.71	152.16	158.85	166.52	178.16	172.10	172.26	177.68	173.38

	1976 by province											
	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.
Number	1,428	231	1,358	1,201	11,564	14,658	1,887	1,188	2,796	3,802	. .	38
Rate per 100,000 population	254.14	193.14	162.91	175.53	184.73	176.20	183.99	127.55	149.07	153.15	. .	88.79

Source: Canada Health Manpower Inventory, Health Information Division, **Health and Welfare Canada**.

Graduates of Health Professional Schools

Dental Graduates

In 1968, seven schools of dentistry in five provinces produced 306 graduates. Ten years later, the total number of graduates produced by ten schools in seven provinces had risen to 469, an increase of just over 53%. Ontario, with two schools of dentistry, and Quebec with three schools, led all provinces in 1978 with 321 or 68.4% of the graduates. Newfoundland, Prince Edward Island and New Brunswick do not have schools of dentistry (Table 87).

In 1974, women accounted for 7.1% of the dental graduates in Canada (figures were not available for years prior to 1974). Four years later, women graduates had increased dramatically to 17.5%, indicating that more women, primarily in Ontario and Quebec, are choosing dentistry as a professional career.

Medical Graduates

The number of medical graduates in Canada increased by 75.4% during 1968-1978, with the largest increase occurring in 1974. In that year, the number was 17.4% higher than in 1973. The addition of three new medical schools at the turn of the decade was partly responsible for the large increase in graduates in 1974 (Table 87).

Perhaps the most significant trend in the composition of the graduating classes of medical doctors is the distribution by sex. In 1968, the percentage of women graduates was approximately 11%; by 1978, it had risen to nearly 30%.[5] The number of women enrolled in medical schools in 1960 was 330 compared to 2,432 in 1978, an increase of 637%. From 1960 to 1978, the proportion of women medical students had climbed from 9.4% to 33.3%.

Nursing Graduates

The number of nurses graduating from nursing schools in Canada remained relatively stable during 1968-1976. Although data on the number of diploma graduates is not available for Quebec in 1977 or for Quebec and Ontario in 1978, there were probably no significant differences in the number of graduates (Table 87).

A noticeable increase, however, was apparent in the number of nurses graduating from basic baccalaureate programs. In 1968, 300 nurses or 3.8% were basic baccalaureate graduates; by 1976, that had changed to 954 or 9.5%. Assuming the output of diploma graduates remained relatively constant, degree graduates would have represented 9.8% of the total in 1977 and 10.5% in 1978.

Pharmacy Graduates

In 1978 there were 675 graduates of pharmacy schools in Canada, 284 more than in 1968. Beginning in 1976, women outnumbered men in the total graduating classes; just over 60% of the graduates in 1978 were women. About 46.1% of the graduates received their training in Ontario and Quebec; of those, 61.4% were women. Newfoundland and Nova Scotia accounted for only 12.7 of the Canadian graduates (Table 87).

Optometry Graduates

The graduating classes of the two schools of optometry in Canada were very small in comparison with other professional health disciplines. In 1978, 36 people graduated from the University of Montreal School of Optometry, three times the number in 1968. A total of 57 graduated in 1978 from the University of Waterloo, an increase of 137.5% over a decade earlier.

Facilities

In 1977-1978 fiscal year, there were 1,095 public hospitals operating in Canada (Table 88) and 3,909 special care facilities, such as nursing homes and homes for the elderly.[6] A decrease of 4.9% in the number of hospital beds from 1970 to 1977-1978 contrasted with an increase of 19.1% in the number of beds in special care facilities from 1975 to 1977-1978. Similarly, the rate of public hospital

[5] *Enrolment in Canadian Medical Schools, 1979-1980*, **O. Adams**, Association of Canadian Medical Colleges, 1981.

[6] **Source:** Institutional Statistics Section, Health Division, **Statistics Canada.**

TABLE 87. Graduates of Health Professional Schools by Profession, Canada, 1968-1978

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	
	Number										Number	% Female
Medecine	1,004	1,017	1,069	1,130	1,280	1,331	1,561	1,548	1,725	1,704	1,761	-
Dentistry	306	339	344	363	398	401	448	436	465	469	479	17.48
Optometry	36	34	57	22[1]	48	84	88	97	96	95	93	-
Pharmacy	391	337	409	425	450	497	614	642	646	695	675	60.74
Nursing	7,891	8,359	8,625	10,058	10,083	9,594	9,899	9,770	10,041	7,180[2]	. .	. .

[1] Course of study changed to a five year program.
[2] Figures not available for initial diploma graduates in Quebec.
Source: Post Secondary Education Section, Education, Science and Culture Division, **Statistics Canada**.

TABLE 88. Number and Rated Bed Capacity of Operating Public Hospitals and Mental Institutions, Canada, 1970 to 1977-1978

	1970		1971		1972		1973		1974		1975		1976		1977-1978	
	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap.	No. hosp.	Rated bed cap
CANADA	**1,171**	**198,442**	**1,176**	**197,255**	**1,175**	**195,800**	**1,171**	**195,046**	**1,158**	**195,694**	**1,163**	**197,956**	**1,147**	**188,676**	**1,095**	**174,024**
Newfoundland															48	3,645
Prince Edward Island															11	1,038
Nova Scotia															50	5,951
New Brunswick															37	5,450
Quebec															200	49,996
Ontario															250	55,146
Manitoba															83	7,208
Saskatchewan															138	8,340
Alberta															149	16,000
British Columbia															126	21,088
Northwest Territories															3	162

Source: Institutional Statistics Section, Health Division, **Statistics Canada**.

beds per 100,000 persons decreased 25% from 1970 to 1977-1978, but there was an increase in the rated bed capacity in special care facilities. In the fiscal year 1977-1978, there were 822 approved beds in special care facilities for every 100,000 Canadians, 15% more than in 1975.

The occupancy rate in public general and allied special hospitals remained quite stable during 1970 to 1976, decreasing only half a percent from 79.7% in 1970 to 79.2% in 1976. The occupancy rate for public mental hospitals dropped slightly from 92.9% to 88.8% for the same period (Table 89).

TABLE 89. Occupancy Rate Based on Rated Bed Capacity by Type of Hospital, Canada, 1968-1976

	Public, general and allied special hospitals	Public mental hospitals	Public tuberculosis sanatoria
	per cent		
1968	79.7	92.9	64.2
1969	79.4	94.7	64.4
1970	79.6	93.0	55.8
1971	79.9	94.6	51.6
1972	79.6	92.4	57.7
1973	78.8	90.5	65.1
1974	78.2	90.1	71.3
1975	77.3	89.1	64.5
1976	79.2	88.8	-

Source: Institutional Statistics Section, Health Division, **Statistics Canada**

Expenditures

In 1979, total health expenditures in Canada were $18.6 billion, an average of $785 per person.[7] During the period 1970 to 1979, health expenditures increased 202% while the average amount spent on each person increased 172%. Dramatic increases in health expenditures of 17.5% in 1974 and 20.5% in 1975, were followed by smaller increases of 14.2% and 9.3% in the next two years (Table 90). In 1979, health care costs increased 11.6%.

As a proportion of Gross National Product, the cost of health care in Canada remained relatively stable during the 1970s. This contrasted with the United States, where the total health care bill continued to represent a growing proportion of GNP. In Canada, health care expenditures accounted for 7.2% of GNP in 1970 and 7.1% in 1979 (Table 91), while the U.S. figure climbed from 7.6% to 9%.[8]

The largest component of national health expenditures continues to be institutional care, i.e., hospitals and related institutions. In 1979, institutional care represented 54% or $10.0 billion.

Although the operating cost of institutional care increased 218% from 1970 to 1979, largely because of inflation, this element remained relatively constant at 50.5% to 55.9% of health expenditures. It cost more than $6 billion to operate public hospitals in 1977-1978; chronic/extended care hospitals accounted for 9%, nearly twice the proportion in 1969. The 476% increase in the costs of chronic/extended care hospitals from 1969 to 1978 was mostly the result of the change-over of some of Quebec's psychiatric hospitals to chronic/extended care. As a result, costs jumped 80% in 1976, the year of the change-over (Table 92).

Professional care accounted for the second highest portion of total health care expenditures, approximately 23% in 1979, the same as in 1970. About 67% of the $4.2 billion of professional care in 1979 was physician services. Although the amount spent on physician services increased 171% from 1970 to 1979, the proportion actually decreased somewhat from 74% in 1970 to 67% in 1979.

[7] *National Health Expenditures in Canada, 1970-1979*, **Health and Welfare Canada**, 1981 (in preparation).

[8] *Health Care Financing Review, 1980*, **Department of Health and Human Services**, Baltimore, Md.,1980, p. 16.

Table 90. National Health Expenditures by Category, Canada, 1970-1978

	1970	1971	1972	1973	1974	1975	1976	1977	1978
	millions of dollars								
TOTAL EXPENDITURES	**6,086.7**	**6,935.8**	**7,542.9**	**8,429.6**	**9,906.0**	**11,888.0**	**13,551.2**	**14,702.7**	**16,181.5**
Institutional care	3,078.4	3,464.7	3,807.2	4,299.1	5,231.2	6,470.6	7,453.5	7,895.8	8,611.4
Hopitals	2,758.6	3,078.5	3,365.2	3,783.2	4,588.4	5,679.0	6,434.6	6,768.5	7,337.7
General and allied special	2,251.7	2,529.8	2,785.7	3,150.2	3,877.7	4,873.7	5,673.0	6,046.1	6,642.1
Mental	407.7	443.2	475.6	529.7	605.8	696.8	650.6	611.6	610.0
Tuberculosis	23.7	21.2	12.7	9.7	6.4	7.1	..	..	..
Federal	75.4	84.3	91.2	93.6	98.5	101.4	111.0	110.8	85.6
Nursing homes	319.8	386.2	442.0	515.9	642.8	791.6	1,018.9	1,127.0	1,273.7
Professional care	1,409.8	1,675.2	1,859.2	2,038.1	2,290.7	2,685.0	2,998.4	3,348.2	3,676.7
Physicians	1,040.7	1,250.4	1,386.2	1,483.4	1,659.7	1,914.1	2,103.2	2,309.0	2,539.1
Dentists	265.0	311.5	350.6	419.1	483.9	596.6	699.8	827.6	918.1
Other professions	104.1	113.3	122.4	135.5	147.1	174.2	195.4	211.6	219.5
Chiropractors	34.2	39.3	43.5	49.5	56.8	66.5	77.4	87.7	93.5
Osteopaths	1.9	2.1	2.1	2.3	2.1	2.1	2.2	2.1	2.0
Optometrists	45.4	49.0	52.8	57.4	63.7	71.4	79.9	86.5	87.6
Podiatrists	3.9	4.2	4.7	6.3	8.4	13.1	14.3	14.7	15.6
VON	8.1	8.7	9.6	10.4	13.0	17.0	18.2	18.0	19.3
Private duty nurses	10.6	10.1	9.6	9.7	3.2	4.0	3.4	2.6	1.5
Drugs and appliances	779.4	865.1	921.1	1,023.5	1,109.4	1,286.6	1,462.0	1,621.7	1,821.6
Prescribed drugs	368.7	402.5	421.1	466.9	498.0	578.7	660.2	730.2	825.3
Non-prescribed drugs	329.4	361.6	379.9	424.8	459.5	536.8	610.9	674.2	760.4
Appliances	81.3	100.9	120.1	131.8	151.9	171.1	190.9	217.3	235.9
Eyeglasses - Optometrists	27.1	29.2	31.6	34.3	38.1	42.7	47.8	51.8	52.6
Eyeglasses - Opticians	31.5	45.0	57.2	63.0	73.0	82.4	94.3	110.0	120.3
Hearing aids	9.7	10.0	10.7	11.3	13.3	14.9	13.6	15.7	20.4
Other prostheses	13.0	16.7	20.5	23.3	27.5	31.1	35.2	39.8	42.6
Other expenditures	819.1	930.7	955.5	1,068.8	1,274.7	1,445.8	1,637.3	1,837.3	2,071.8
Repayment and administration	97.7	122.2	132.9	144.8	171.8	203.3	205.9	246.8	242.0
Public health	197.2	214.4	230.2	247.8	283.2	348.5	452.6	506.4	560.2
Research	70.3	78.2	89.6	100.6	112.7	122.0	134.5	162.5	185.7
Capital	365.4	420.8	400.4	457.1	568.7	606.0	649.5	698.9	826.7
Other expenditures	88.5	95.1	102.4	118.6	138.2	166.0	194.8	222.7	257.2

Source: *National Health Expenditures in Canada, 1970-1979*, Health Information Division, **Health and Welfare Canada** (1981 in preparation).

TABLE 91. National Health Expenditures as a Proportion of GNP, Canada and United States, 1970-1978

	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total health care expenditures - United States	7.6	7.8	8.0	7.9	8.2	8.6	8.7	8.9	8.9
Total health care expenditures - Canada	7.1	7.3	7.2	6.8	6.7	7.2	7.1	7.0	7.0
Institutional care	3.6	3.7	3.6	3.5	3.6	3.9	3.9	3.8	3.8
Professional care	1.7	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6
Drugs and appliances	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8
Other expenditures	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9

Source: National Health Expenditures, 1970-1979, Health Information Division, **Health and Welfare Canada** (1981 in preparation).

TABLE 92. Operating Costs of Public Hospitals by Type of Hospital, Canada 1969 to 1977-1978

	1969	1970	1971	1972	1973	1974	1975	1976	1977-1978	Increase
	millions of dollars									%
TOTAL	**1,961.0**	**2,244.3**	**2,509.2**	**2,779.4**	**3,121.3**	**3,860.7**	**4,712.4**	**5,648.5**	**6,263.7**	**219**
General	1,725.2	1,969.8	2,204.6	2,440.1	2,752.0	3,409.1	4,133.8	4,792.5	5,294.7	207
Children	65.2	77.9	88.2	97.5	102.0	131.3	163.1	190.2	213.8	228
Convalescent/ rehabilitation	27.8	30.9	33.1	37.2	39.2	55.6	61.9	77.9	84.5	204
Chronic/extended/ care	98.5	115.9	129.9	146.9	169.4	204.8	278.7	501.8	567.4	476
Other	44.3	49.9	53.4	57.7	58.7	60.0	74.9	86.0	101.4	129
Total hospitals reporting	997	1,000	1,006	1,012	1,006	1,009	1,012	1,033	1,039	. . .

Source: Institutional Statistics Section, Health Division, **Statistics Canada**.

As noted in an analysis of health care expenditures in the United States[9], the cost of physician services understates the impact of physicians on total health care expenditures. Physicians, more than anyone else in the health care sector, influence decisions on hospitalization: which patients are admitted, the type of care they receive, the length of stay and resulting costs. In addition, physicians play a major role regarding prescription drug expenses. There is reason to believe that physicians have a similar impact on the cost of health care in this country as in the United States.

Per capita expenditures for health care in Canada increased 172% from 1970 to 1979. In the provinces, increases in per capita expenditures ranged from 244% in Newfoundland to 155% in Ontario. Alberta was the highest in 1979 with a figure of $874 per person, well above the national average of $785 per capita; British Columbia, Ontario and Manitoba also exceeded the national figure. Newfoundland ($634), Prince Edward Island ($693), New Brunswick ($637) and the Territories ($664) were low (Table 93).

Family expenditures on medical and health care include health insurance premiums for all types of health plans, hospital and professional care, drugs and other medical services and appliances not insured by such plans. Family expenditures on health care of this description varied significantly by income level (see Table 94). In 1972 the bottom 20% of income earners in Canada spent an average $106 or 2.8% of their income on health care; while the top 20% of income earners in 1972 spent more than four times as much ($455), it was still only 2.3% of their income. In 1978 the lowest income families spent $151 or 2.1% on health care. In contrast, those earning the highest levels of income spent more than four times as much on health care ($62) but, again, it represented only 1.7% of their income.[10]

In 1978 physicians earned an average $1,012 a week, four times the industrial wage of $265. Tables produced from taxation data by Revenue Canada show that physicians continued to lead dentists, lawyers and accountants as the highest paid professionals in Canada in 1978.[11] Yet dentists who, on average, earned 32% less than doctors in

[9] *Health United States 1979*, **Department of Health and Human Services**, Hyattsville, Md., 1980.

[10] *Family Expenditures in Canada, 1972-1978*, **Statistics Canada**, Ottawa.

[11] *Earnings of Physicians in Canada*, **Health and Welfare Canada**, Ottawa, 1980.

TABLE 93. Per Capita Expenditures for Personal and Other Health Care, Canada and Provinces, 1970-1978

	1970	1971	1972	1973	1974	1975	1976	1977	1978	Increase (1970-1978)
	dollars per capita									%
CANADA	**285.44**	**321.22**	**345.66**	**381.91**	**442.32**	**523.08**	**588.54**	**631.55**	**688.77**	**141.3**
Newfoundland	187.83	212.54	247.64	305.66	359.34	413.70	467.32	473.61	523.53	178.3
Prince Edward Island	234.90	261.90	277.76	313.73	368.27	415.49	466.22	505.81	580.20	147.0
Nova Scotia	247.69	277.64	303.63	335.92	398.16	489.74	553.35	574.28	670.19	170.6
New Brunswick	226.62	258.62	280.40	336.35	386.03	424.36	410.44	500.51	546.67	141.2
Quebec	263.03	305.49	328.19	370.66	435.09	503.65	560.23	597.88	651.49	147.7
Ontario	318.01	355.00	383.08	413.59	470.92	552.94	621.14	676.80	800.93	151.9
Manitoba	297.59	326.15	351.39	389.27	431.02	516.43	595.11	643.79	679.63	128.4
Saskatchewan	254.06	284.52	301.23	327.27	392.80	490.67	572.30	603.62	641.41	152.5
Alberta	302.23	328.41	349.09	385.59	438.49	538.90	600.87	660.41	754.95	149.8
British Columbia	287.71	317.48	337.04	371.96	445.86	544.53	619.01	672.62	726.24	152.4
Territories	223.25	280.47	268.33	298.35	345.97	483.75	630.03	586.69	665.14	197.9

Source: National Health Expenditures in Canada, 1970-1979, Health Information Division, **Health and Welfare Canada**, (1981 in preparation).

1968, narrowed that margin to 12.1% as their incomes increased 139% between 1968 and 1978. In comparison, physicians earned 86% more on the average in 1978 than in 1968 (Table 95).[12] General duty staff nurses employed in public hospitals, whose incomes increased 177% from 1968 to 1978, averaged $15,307 in 1978.[13]

[12] Despite deficiencies in the data in Table 94 and their unsuitability for detailed analyses where a high degree of precision is essential, the data provide a reasonably reliable picture of relative income levels in particular years, and changes of income over time. More detailed information can be obtained from Health Information Division, **Health and Welfare Canada.**

[13] *Annual Salaries of Hospital Nursing Personnel, 1968-1978,* **Statistics Canada,** Ottawa, 1968-1978.

TABLE 94. Family Expenditures on Health Care by Income Level (Quintiles), Canada, 1972-1978

Average dollar expenditure			First quintile	Second quintile	Third quintile	Fourth quintile	Fifth quintile
Medical health care:	1972	$	105.8	219.7	268.2	350.1	455.0
		%	2.8	3.0	2.6	2.7	2.3
	1974	$	135.2	240.3	296.3	352.3	474.8
		%	2.7	2.4	2.2	2.1	1.8
	1976	$	137.3	291.8	336.9	425.3	561.2
		%	2.3	2.4	2.0	2.0	1.7
	1978	$	151.4	318.0	391.2	471.9	625.7
		%	2.1	2.3	2.0	1.9	1.7

Source: Family Expenditure Section, Consumer Income and Expenditure Division, **Statistics Canada**.

TABLE 95. Income of Selected Professionals, Canada, 1968-1978

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Physicians[1]	28,283	31,384	33,905	38,730	39,396	40,798	41,721	43,774	46,757	49,814	52,499
Dentists[1]	19,336	20,932	21,926	24,892	27,006	29,723	33,174	38,245	41,569	42,653	46,173
Nurses (general duty registered in public hospital)[2]	5,532	--	6,488	--	7,583	--	8,888	--	12,874	--	15,307
Lawyers and notaries[1]	22,057	24,256	25,213	26,282	28,521	33,683	38,811	39,031	41,734	41,055	41,865
Accountants[1]	15,964	17,053	18,137	17,455	18,845	25,412	28,215	32,056	33,746	35,264	36,351

Sources:
[1] Health Information Division, **Health and Welfare Canada**.
[2] Annual Salaries of Hospital Nursing Personnel, 1968-1978, Health Manpower Statistics Section, Health Division, **Statistics Canada**.